INDEX NUMBER

AMERICAN JOURNAL OF ORTHODONTICS

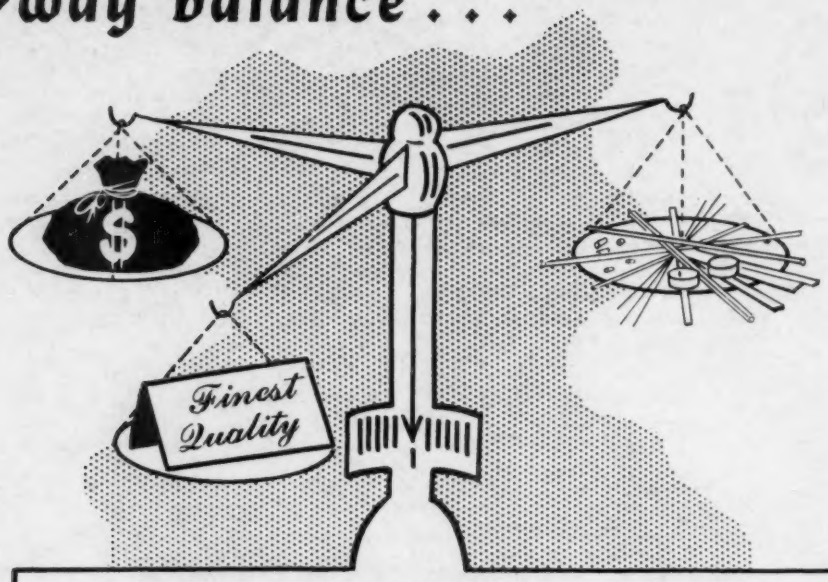
OFFICIAL PUBLICATION OF
THE AMERICAN ASSOCIATION OF ORTHODONTISTS,
ITS COMPONENT SOCIETIES, AND
THE AMERICAN BOARD OF ORTHODONTICS

PUBLISHED BY THE C. V. MOSBY COMPANY, ST. LOUIS 3, U. S. A.

TABLE OF CONTENTS ON PAGE 2

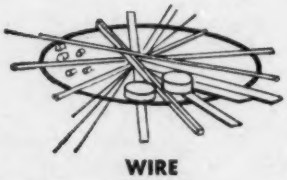
Vol. 45 DECEMBER, 1959 No. 12

3-way balance . . .



ORTHOLOY

NEW! Superior Economy Alloy



WIRE
BANDS
TUBES
TUBING
BAND MATERIAL

Finer Quality: Strength, toughness, versatility and a permanent high lustre, — characteristics equalled only in higher priced alloys.

Greater Economy: Light weight and low rate. More bands per pennyweight. More feet per ounce of band material, wire and tubing.

Wider Variety: Bands in 24 sizes, 2 thicknesses. Band materials in 7 widths, 4 thicknesses. Ortho Wire and Tubing in 8 round gages, 3 rectangular sizes and all standard sizes of half-round or square.

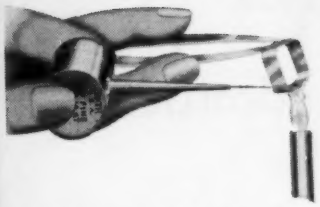
HAVE YOU RECEIVED YOUR COPY OF WILLIAMS NEW COMPLETE LINE ORTHODONTIC CATALOG? IF NOT, WRITE FOR FREE COPY.

ALLOYED INDUCTIVELY
WILLIAMS GOLD
WORLD WIDE ACCEPTANCE

WILLIAMS GOLD REFINING CO., INC.

2978 MAIN ST. BUFFALO 14, N. Y. • FORT ERIE, ONT.

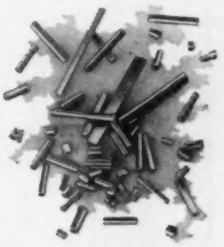
BAKER ORTHODONTIC GOLD SOLDERS



Baker Solders are named according to their fineness as stamped. They have unusual wetting properties, flow freely and form strong, dense, smooth joints without gaseous pits. Our solders are not brittle in wire form. They are packaged on spools of 5 dwts. to fit our spout containers. 28 gauge (.013"), 25 gauge (.018"), or very heavy 23 gauge (.022"). In 1 dwt. pieces, 1 dwt. narrow strips, 2 dwt. wide strips. 14K 450 Fine is a Universal Solder used for all types of connections on steel as well as precious metals. 18K 650 Fine is higher fusing. We list other Orthodontia Solders.

★ ★

HIGH QUALITY SEAMLESS TUBING AND TUBES

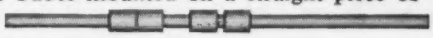


We supply Oralium tubes and tubing almost exclusively because of its hardness, non-stretching qualities and high fusing point. It does not oxidize and is low in cost. All Baker tubing is drawn to fit our wire precisely and is exceptionally smooth and uniform.

All round tubing has a wall thickness of .012".

All lingual tubes have a wall of .015".

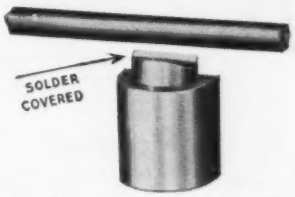
Always order half-round Oralium Tubes mounted on a straight piece of Q-A Post wire to insure fit.



D-SHAPE TUBES AND POSTS COME ON Q-A SEGMENTED WIRE TO FIT.

ALL COMBINATION DOUBLE HEADGEAR TUBES. SAVE CONSIDERABLE TIME.

HALF-ROUND TUBES AND POSTS TUBES HAVE A SHEET OF SOLDER IN PLACE. POSTS ARE GROOVED OUT TO RECEIVE WIRE.



SYMMETRICAL D-SHAPE TUBE AND POST COLLAR SNAPS OVER ARCH WIRE AND IS PLACED IN PERFECT POSITION BEFORE SOLDERING. MADE TO FIT .036, .038, .040 ARCH WIRE.

EXTRA WIDTH OR REGULAR WIDTH

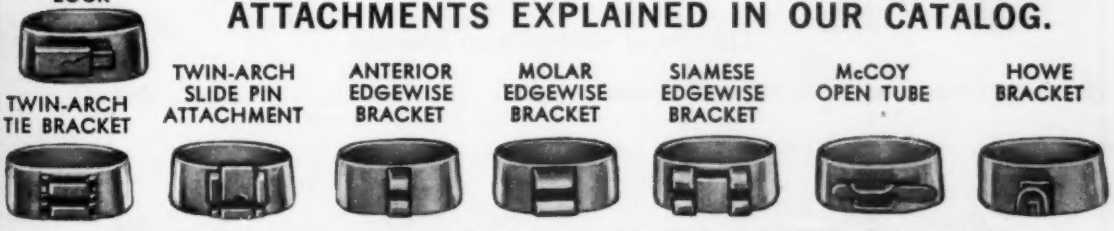
★ ★

PREFORMED ANTERIOR BANDS

Made of Nickel-Chrome Stainless Steel only, 14 sizes supplied plain or with Anterior or Molar Edgewise Brackets without flanges, with genuine Johnson Steel Locks or with locks of your choice.

★ ★

SOME OF THE DOZENS OF LOCKS, BRACKETS AND ATTACHMENTS EXPLAINED IN OUR CATALOG.



WRITE FOR COMPLETE CATALOG, PRICE LIST AND PAD OF POSTPAID ORDER CARDS

ENGELHARD INDUSTRIES, INC.

BAKER DENTAL DIVISION

850 PASSAIC AVENUE • EAST NEWARK, NEW JERSEY

477 Madison Ave. New York, 22 | 55 E. Washington St. Chicago, 2 | 760 Market St. San Francisco, 2 | 1111 Wilshire Blvd. Los Angeles

BAKER
THE WORLD'S LARGEST WORKERS AND REFINERS OF PRECIOUS METALS

CONTENTS FOR DECEMBER, 1959

American Journal of Orthodontics

Original Articles

In Memoriam

Department of Orthodontic Abstracts and Reviews

News and Notes

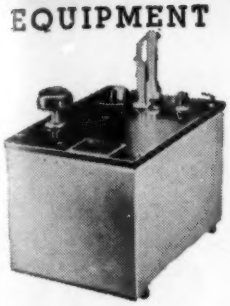
Officers of Orthodontic Societies

Index

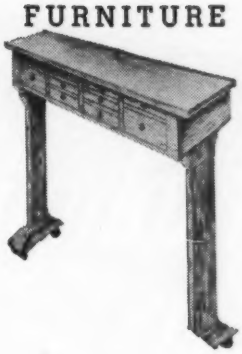
(Editorial and Business Communications on inside back cover)

Vol. 45, No. 12, December, 1959. American Journal of Orthodontics is published monthly by The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, Mo. Subscription rates: United States and its Possessions $10.00, Students $5.00; Canada, Latin-America, and Spain $10.50, Students $5.50; Other Countries $11.00, Students $6.00. Single copies $1.75 postpaid. Entered as Second-class matter, January 14, 1915, at the Post Office at St. Louis, Missouri, under the Act of March 3, 1879. Printed in the U. S. A.

EQUIPMENT

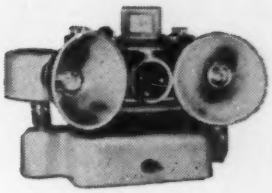


FURNITURE

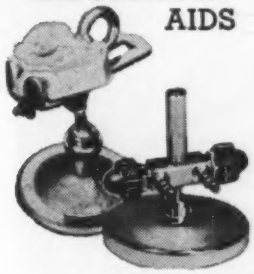


OPERATING AIDS

PHOTOGRAPHY



LABORATORY AIDS



INSTRUMENTS

5 Minutes!

Dear Doctor:

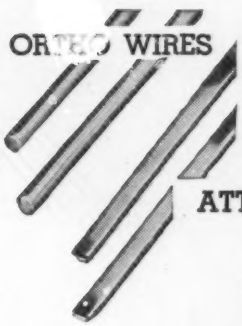
Have you 5 minutes to look through the catalogue we sent you a few months ago? There are a number of items, exclusively ours, that will assist you in saving hours of "Chair Time."

New brackets—New attachments —New tubes — New materials — New pliers—New aids.

Cordially yours,

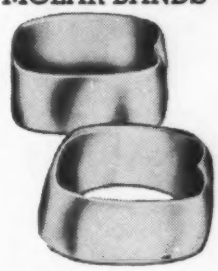
Betta Orthodontic Supplies

ORTHO WIRES

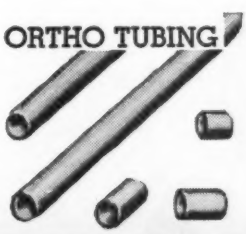


ATTACHMENTS

MOLAR BANDS



ORTHO TUBING

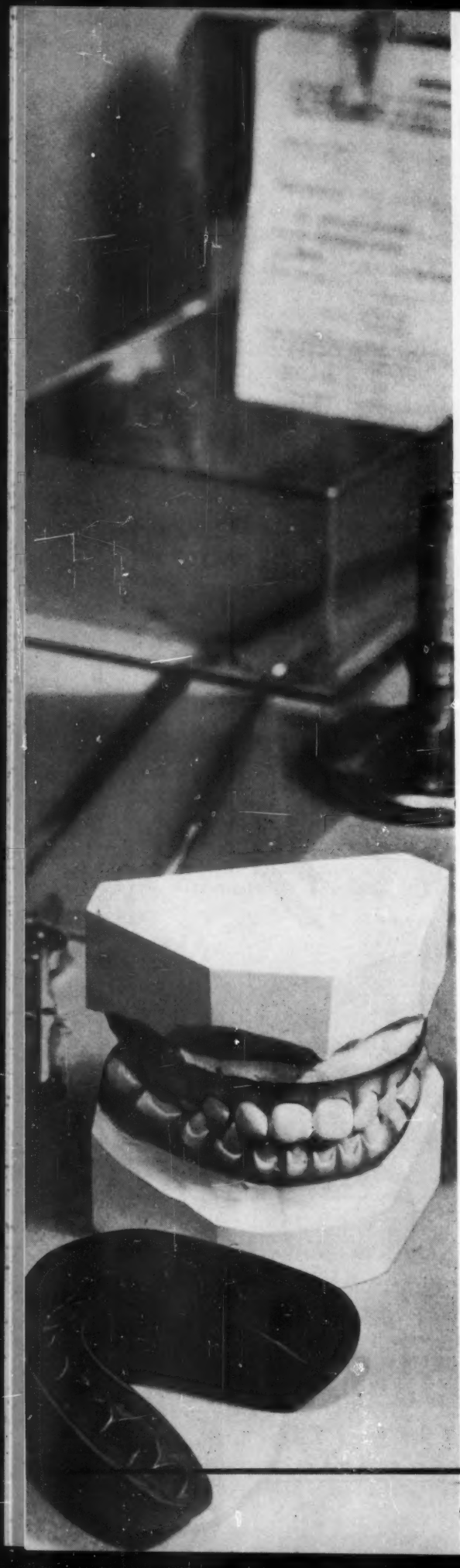


ETTA ORTHODONTIC SUPPLIES

0 WEST 54TH STREET • NEW YORK 19

F IT'S ORTHODONTIC . . . WE HAVE IT''

BETTA ORTHODONTIC SUPPLIES



Best Wishes . . .

The staff and management of T-P Laboratories, Inc. extends best wishes to our many friends for a joyous holiday season.

TP **T-P LABORATORIES,** Inc.

Post Office Box 73 LaPorte, Indiana

ASK THE ORTHODONTISTS WE SERVE

SINCE 1929

Orthodontist's Service

℞ by prescription only

Dear Doctor:

We can add more hours to your "chair time" day, if we process your retainers and bite plates.

Whether it is an acrylic Hawley Retainer or a Crozat type all-metal retainer, you may be certain it will go to place with a minimum of effort, thus increasing your "chair time" for other operative needs.

Air Mail Special Delivery delivers a finished appliance anywhere in the United States in time to meet your patient's appointment.

Sincerely
Orthodontist's Service

P.S. A postcard will bring our brochure "B."

To Your Rx

HAWLEY RETAINERS

- Regulation Hawley
- Flat Wire Hawley
- Full Labial Hawley
- Arrow Clasp Hawley
- Expansion Screw Plate
- Coffin Spring Retainer
- Crozat Retainer
- Johnson Retainer
- Sillman Retainer
- Sillman Splint
- Jackson Retainer
- Higley Split Plate
- Skeletal Retainer

ACRYLIC BITE PLATES

- Anterior Bite Plate
- Acrylic Guide Plane
- Northwestern Bite Plate
- Posterior Bite Plate
- Full Occlusal Splint
- Lower Reverse Incline
- Sved Bite Plate
- Sved Distal Drive
- Lingual Anchor Plate
- Monoblock
- Acrylic Chin Cap
- Acrylic Mouth Shield

FIXED APPLIANCE DEPT.

- Soldered Linguals
- Removable Linguals
- Space Maintainers
- Swedged Bands
  - Molar—Cuspid
- Extra-Oral Bows

— • —

Stainless Steel
or
Precious Metal

250 WEST 54th ST. • NEW YORK 19, N. Y. • • • JUdson 2-0277-8

SERVICES LIMITED TO ORTHODONTICS • "You Prescribe it. We make it"

have you heard . . .

how to make more efficient use of a hygienist in your office?

Give Her a Copy of This New Book

CLINICAL DENTAL HYGIENE

Perhaps you have never really analyzed it before, but you'll no doubt agree that your basic purpose in retaining a dental hygienist is to *save your time.* A well trained assistant can help you see more patients and do a more efficient job in treating them.

This new Mosby book CLINICAL DENTAL HYGIENE can help your assistant better understand all of the clinical procedures of the dental office so that she can perform her own duties more skillfully and improve her chairside assistance to you. Edited by Dr. Shailer Peterson and written by 18 teachers from outstanding schools of dental hygiene and dentistry, this newly released book includes:

- ★ Descriptions and photos to help her recognize, care for and sterilize all kinds of instruments and laboratory equipment
- ★ Photos and diagrams that show her how to select and lay out trays of instruments for each patient on your appointment schedule
- ★ Discussions on how she can save you time by more complete observation of the general systemic health of the patient when completing case history forms
- ★ A full chapter on alternate methods of sterilization
- ★ Discussions of appointment procedures and recall problems
- ★ Easy-to-understand, but scientific discussions of the history and present-day use and theory of roentgen rays in dentistry
- ★ The full procedures and chemistry of processing X-ray films
- ★ A full chapter on her role in preventive dentistry

Why wait—start saving valuable time now and substantially expand your practice. Order a copy of this book for your assistant today.

Just Published!

Edited by SHAILER PETERSON

B.A., M.A., Ph.D., F.A.C.D.

Secretary, Council on Dental Education of the American Dental Association; Associate Clinical Professor at Chicago College of Dental Surgery of Loyola University. Formerly, Director of Educational Measurements of the Council on Dental Education; Secretary of the Council of the National Board of Dental Examiners; Secretary of the Committee of Economics. Written by 18 well qualified authors. Just Published. 1959, 348 pages, 6½" x 9½", 161 figures. Price, $6.75

Mark and Mail This Coupon to Order on 10 Day Approval!

THE C. V. MOSBY COMPANY
3207 Washington Blvd., St. Louis 3, Missouri Date .....

Dear Sir:

Please send me on 10 day approval a copy of Peterson CLINICAL DENTAL HYGIENE priced at $6.75. I understand if I am not completely satisfied I can return the book within 10 days with no charge or obligation. Otherwise, you will bill me for the book plus a small mailing charge. If remittance is enclosed, publisher pays the mailing charge.

☐ Payment enclosed (Same return privilege) ☐ Charge my account

..... D.D.S.

Address .....

City ..... Zone ..... State.....

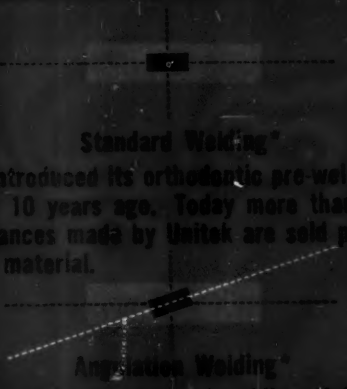
ORTHO-12-59


"ANOTHER
TIME-SAVING
SERVICE
FROM UNITEK ?"
"JUST TURN
THE PAGE"

UNITEK'S NEW ANGULATION WELDING SERVICE

NEW SERVICE SAVES LAB TIME
SAVES CHAIR TIME
INSURES EXACT ALIGNMENT OF BRACKETS

Unitek now offers another convenience to the orthodontist: a complete welding service which will join any Unitek bracket to any Unitek band material at any angle. Unitek angulation welding attaches the bracket at the angle needed for correction of the individual tooth. It eliminates "guesstimating" the bracket-to-band welding angle and simplifies the problem of putting tip-back and artistic bends in the arch wire. It saves you lab time and chair time, both — gives you more time for your busy appointment schedule. Simply specify the bracket angles desired, and Unitek's new welding service will do the job for you — precisely, quickly and inexpensively.



Standard Welding*

Unitek introduced its orthodontic pre-welding service over 10 years ago. Today more than 50% of all appliances made by Unitek are sold pre-welded to band material.

Angulation Welding*

Now, in addition to standard welding, Unitek offers angulation welding, which puts the bracket on the band at precisely the angle desired (here exaggerated for clarity), eliminating all guesswork.

*We'll gladly offset brackets, lingually, at no additional cost.

Unitek's new angulation welding service is but one of many contributions to modern orthodontics. Unitek has added more than 100 time-saving aids to the line in the past year. As patients become more numerous and the demands on doctors' time increase, Unitek is constantly probing to find new ways to relieve orthodontists of much routine, time-consuming work and to advance the state of the art.

Future plans at Unitek call for expansion of this "prescription facility" concept which has proved so helpful to the profession.

Send for complimentary professional samples.

UNITEK CORPORATION

2775 North Halstead Avenue, Pasadena, California
60 East 42nd Street, New York 17, New York

Pacing the Science of Orthodontics with Technical Progress

TOMORROW'S ORTHODONTIC PRODUCTS

today

The word Oscar has many connotations for all of us. To some it may be your first name, to others it may symbolize the award for outstanding theatrical performance . . . but to us Oscar is the name of our new corporation dedicated to supplying the finest in Orthodontic supplies and equipment.

Oscar is developing a line of brackets, all types of wire, contoured band strips, preformed bands, coil springs, tubes, headgears, and an exclusive line of fine specialties, including the only complete line of supplies for the indirect band technique.

Superior design and quality is assured in every Oscar product by careful test and evaluation by a group of well known Orthodontists from every section of the country. When our products bear the Oscar "symbol of quality" it is the result of careful research, skilled craftsmanship, and careful testing . . . a product you can use with pride and confidence.

Oscar's central location in Indianapolis, Indiana, makes possible overnight air delivery to every part of the nation.

Oscar has initiated and is carrying out a continuing program of research in which your ideas and suggestions will receive our wholehearted cooperation and attention.

CATALOGUE

A complete catalogue describing the Oscar line of products is being prepared in sections for binding in a beautiful, permanent binder. Watch for your binder including the first sections.

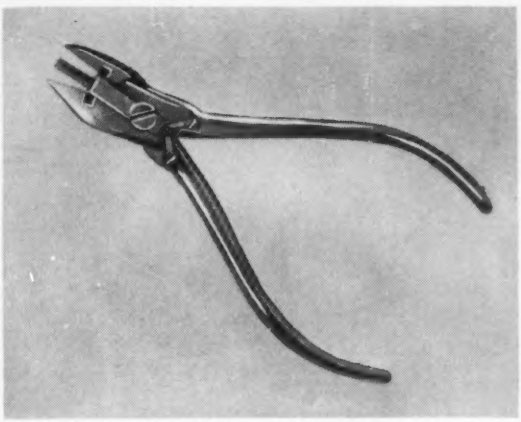
Oscar

T. M. REG.

ORTHODONTIC SUPPLY CORP. AND RESEARCH INC.

302 AGNES STREET • INDIANAPOLIS, INDIANA

another group of special orthodontic plier designs from PARKELL

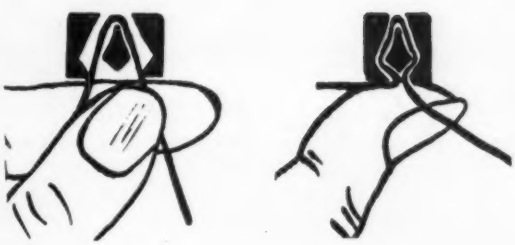


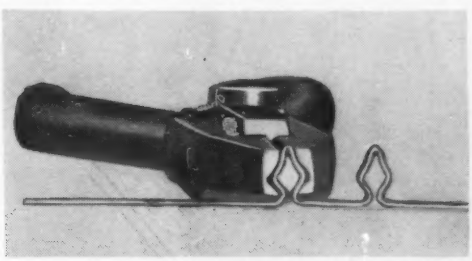
ARROWHEAD LOOP FORMER

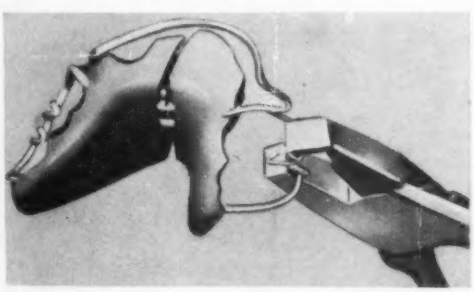
No. 5026

Forms arrowhead loops automatically

Simply bend wire into a "V" and place in the pliers as illustrated. Closing the pliers automatically forms the wire into a precisely shaped arrowhead loop.







ARROWHEAD LOOP ADJUSTER

No. 5028

Specially shaped jaws grip arrowhead loops and bend them over into the desired relationship to the teeth.

Complete information on the above technic can be found in "JAW ORTHOPEDICS" by Andresen and Haupl

Write for our catalog showing the widest selection of orthodontic pliers

PARKELL Co. 23-06 31st Ave., Long Island City 6, N. Y.

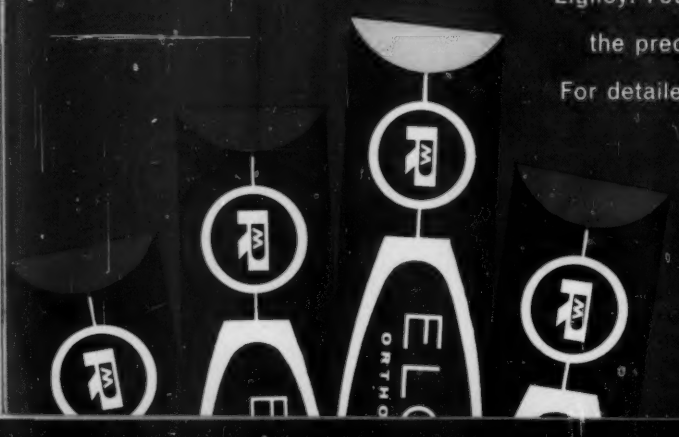
delicacy

STRENGTH...

ORTHODONTIC

ELGILOY WIRES

TEST AND COMPARE. See how Elgiloy assures you of consistency... continued arch wire performance... and savings in treatment-time... Try each of the four tempers. Notice the springiness of the resilient wires, the ease in forming the softer wires. Heat-treat and test the change in characteristics... Note the versatility of Elgiloy. You will find it superior and ideal for meeting the precision requirements of modern orthodontics... For detailed information on sizes and uses refer to R. M. Orthodontic Wire Manual and Catalog.



ROCKY MOUNTAIN®
METAL PRODUCTS CO.
NEW YORK DENVER SAN FRANCISCO

American Journal

of

ORTHODONTICS

VOL. 45 DECEMBER, 1959 No. 12

Original Articles

PRESENT ORTHODONTIC THOUGHT IN GERMANY

GUSTAV KORKHAUS, M.D., D.D.S., BONN, GERMANY

THE ever-progressing development of our civilization and, above all, our technical progress have extraordinarily decreased the size of the globe on which we live. Continents move closer together, and the wireless and press carry news into the smallest village with the speed of lightning. In spite of this, there are great divergencies in the opinions concerning theoretical and clinical problems in the special fields of medicine. This is due not so much to logical scientific reasoning as to an ignorance of the research and clinical observations which have been undertaken in other countries and on other continents. From the building of the Tower of Babel up to the present day, the different languages have also made communication among us human beings more difficult.

If, for instance, the scientific opinions expressed in the *Fortschritte der Kieferorthopädie,* which I edit, are compared with those expressed in the Journal's larger sister, the *American Journal of Orthodontics,* the differences in opinion of the authors concerning many problems of our field are clearly revealed. It is not for me, of course, to claim that the European opinion, especially the German one, is the only correct one. I am very happy and satisfied however, that I am today given an opportunity to speak about German orthodontics and therefore to start an exchange of knowledge and experiences which can only be advantageous for the development of orthodontics in all countries. In view of the brief time at my disposal, it is possible for me to select only a few problems.

DIAGNOSIS OF DENTO-MAXILLO-FACIAL ANOMALIES

In 1931 Broadbent and Hofrath, writing independently of one another, suggested a systematic analysis of aimed teleradiographs which brought a new

Presented before the Central Section of the American Association of Orthodontists, Chicago, Illinois, Oct. 1, 1956.

development into cephalometric diagnosis in orthodontics. The most important factor for the metric evaluation of teleradiographs of the head, apart from a correct adjustment, is a sufficient distance between the focus and the film. With my apparatus (Fig. 1) I was able to extend this distance to between 4 and 5 meters.

Recently Hausser has worked on the conditions necessary for the taking of teleradiographs and has calculated the degree of inaccuracy dependent upon the relationship between the distance of the apparatus from the patient (focus-film distance) and the distance between the objective and the film. For example, when a teleradiograph of the head is taken from the side, if there is a distance of approximately 15 cm. between the film and the off side of the plate the inaccuracies due to projection amount to 17.6 per cent when the focus-film distance is 1 meter and to 3.9 per cent when the focus-film distance is 4 meters.

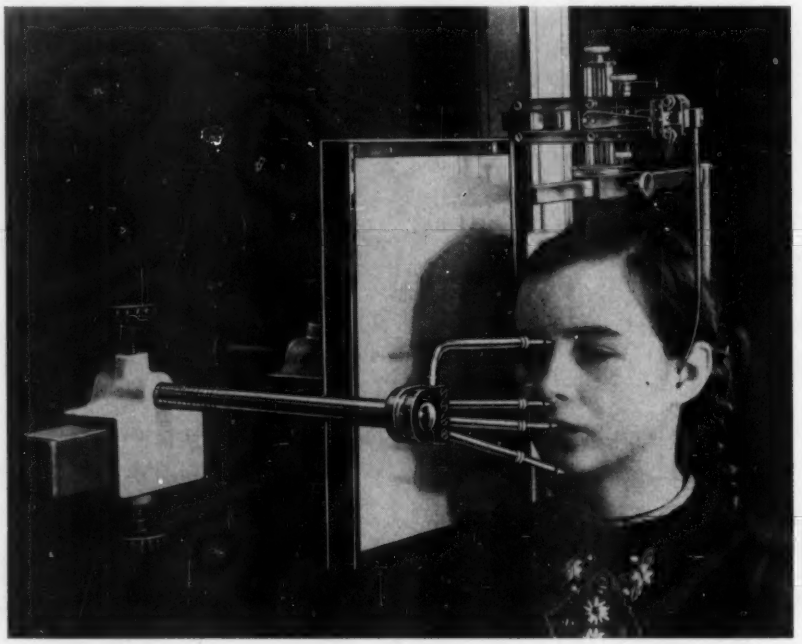


Fig. 1.—The patient in position with the Siemens teleradiograph-aiming device of Korkhaus.

For objects in the median sagittal plane, which may be placed at a distance of approximately 7.5 cm. from the film, these values for the inaccuracies due to projection are reduced to 8.1 per cent if the focus-film distance is 1 meter and to only 1.9 per cent if a distance of 4 meters is chosen. This shows how important it is to have on the one side a large distance for taking the radiograph and on the other a small distance between the object and the film.

Naturally, it is possible to choose such large distances for the taking of the radiographs only if there is available a sufficiently efficient radiographic machine which is able to produce, despite the large distance, adequately intense radiation

to affect the sensitive layer of the film. With the Siemens-Monophos radiographic machine an exposure of one and one-half to two and one-half seconds, according to the age and size of the patient, is sufficient at a distance of 4 meters. The tube receives an 80 Ma. current at a tension of 100 kv. The difficulties caused by the difference in the density of the soft tissues and the bones are overcome by following Hofrath's suggestion to subsequently weaken the well-covered shadows of the soft tissue, so that finally there is produced a plastic and well-contrasted radiograph which shows the entire build-up of the facial skull together with the soft tissues (Fig. 2). Except in special examinations in which it is desired that the freeway space of the mandible in rest position be ascertained, the teleradiograph is taken with the teeth in contact, that is, in so-called centric occlusion.

Fig. 2.—Weakening of the soft-tissue regions of the teleradiograph.

My suggestions for the analysis of teleradiographs in 1936, which at that time were still rather vague, soon took on more definite shape. In 1936, at the congress of the French Society for Orthodontia in Brussels, I stated that the planned analysis of the teleradiograph should concentrate systematically on "extending attention during the course of an examination from the immediate region of the teeth to the individual components building up the face to a unit and to the relationship of these components to each other."

The following regions can be differentiated:

1. The region of the teeth and of the alveolar arches (in relation to the occlusal plane).

2. The region of the entire dentition, that is, the relationship between the teeth and the alveolar bones to their jaws (the planes of the base of the maxilla and mandible).

3. The region of the entire skull, that is, the position of the dentition within the facial skull, related to the eye-ear plane).

4. The region of the entire head, especially the relationship between the facial skull and the cerebral skull.

Fig. 3.—Teleradiograph with anthropologic points.

This sytematic analysis has been carried out in my clinic since 1936 with thousands of teleradiographs, and I am now in a position to say that this method has been satisfactory in every respect. The regional definition of functional and constructive regions is, above all, very advantageous, since it safeguards against losing oneself in the maze of many details shown by the teleradiograph and thus overlooking the relationship between the immediate region of the dentition and the position of the dentition in the facial skull. In this way, it is also easier to recognize clearly the typical characteristics of the facial skull which are connected with the various dentitional anomalies.

For the synthesis which follows the analysis, that is, for the evaluation of the many single results to a joint plastic picture, De Coster's net diagram is without doubt very advantageous. It is a method of biometric evaluation, but of evaluation in the sense of the most highly developed biometrical norm—the

correlative norm. By the deformation of the links of the net in a sagittal and vertical direction, the net diagram shows up zones of excessive development and underdevelopment in the facial skull. Granted, the practical application of this method still presents definite difficulties. These are due to the absence of sufficiently well-based norm diagrams which take into consideration the most important fixed points of the facial skull. Our hope that the extensive norm investigations which have been carried out in many places would, with the aid of the teleradiographic technique, produce such norm diagrams for every age and sex and for every constitution and race during the course of time unfortunately has not been realized.

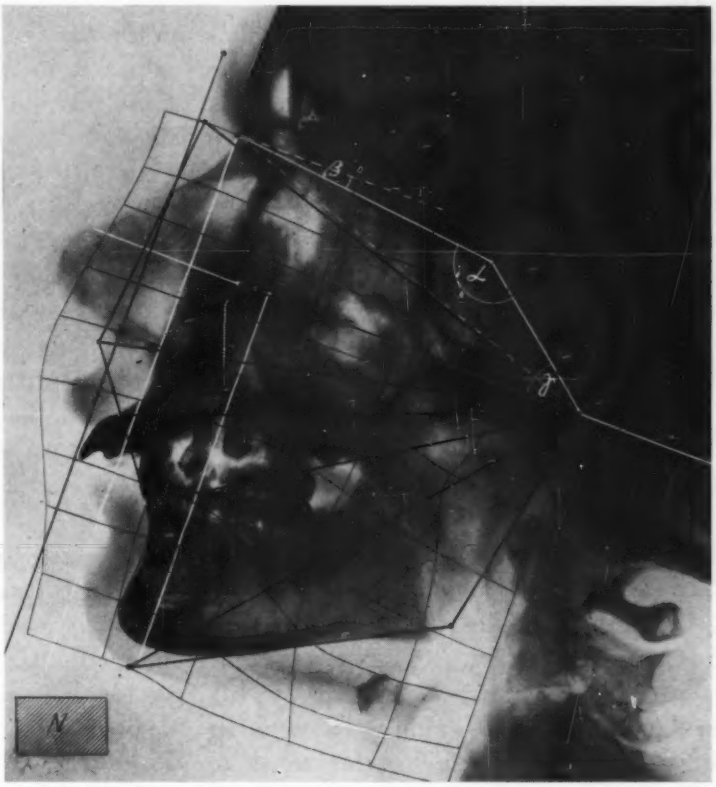


Fig. 4.—Synthesis from the results of the individual examinations in a case of "compression of the jaws with crowding of the upper anterior teeth and distoclusion" (Class II, Division 1) evaluated by De Coster's net method.

In the early years of cephalometric examinations it was chiefly the European orthodontists who brought forward various suggestions for the definition of the relationship between the dentition and the facial skull by means of plaster masks, gnathostatic or geometric-graphic reproduction, and finally, comparable orthodontic photographs which could be evaluated metrically. During the last twenty years, however, a remarkable and welcome activity has been observed among the orthodontists of the United States, who have recognized the great practical and scientific importance of the teleradiographic method. Even though the work of the American orthodontists has been very extensive,

it must be observed that everything is still on the move and that a standardization of the cephalometric examination, which has entered everywhere into orthodontic practice and research, has not yet been effected.

Without discussing in detail the various suggestions and schools of thought, I would like to make a few critical remarks. All examinations with respect to the size and the position of the maxilla and the mandible in the facial skull are carried out by means of linear and angle measurements which are defined by points lying in the facial skull and in the region of the dentition. As a result, the typical characteristics of the general build-up of the facial skull are identified with the type of malocclusion present and the true relationships are overlooked.

In this connection, the inclination of the plane of the base of the maxilla related to the eye-ear plane is of special interest. Schwarz, in a noteworthy paper, has pointed out the fundamental importance of the plane of the base of the maxilla. He defined this plane with the spina nasalis anterior and the spina nasalis posterior and termed it the "spina plane." He pointed out that with the help of this plane the position of the entire dentition in relation to the facial skull can be defined. According to the angle that the plane of the base of the maxilla makes with the nasion-sella plane, a classical variety of positions of the dentition in the facial skull is revealed. The occlusion of the dental arches can nevertheless be anatomically quite correct. If this angle exceeds by a few degrees its average value of 7 to 8 degrees, the dentition is swung backward (retroinclination) with a retrusion of the chin. On the other hand, a very small angle of 5 degrees or less, or even a negative angle, is associated with an anterior swinging of the dentition (ante-inclination) and a prominence of the chin in the profile.

It would therefore appear that if one is to recognize the different individual positions of the entire dentition in the facial skull, an examination of the inclination of the base of the maxilla is of great importance, especially if it is remembered that occlusal anomalies accompany different inclinations and therefore create entirely different circumstances. In cases of incorrect bite the pathogenetic character of the profile is increased by an inclination in the same direction but decreased by an inclination in an opposite direction, as pointed out by Schwarz.

The American methods for analyzing teleradiographs also attempt to differentiate between the observations in the region of the dentition itself and those of the entire facial skull. The method which was specified by Downs in 1948, and which undoubtedly is the one most commonly used in your country, principally divides the examination into an observation of the craniometric relationships (skeletal pattern) and of the dentition (denture pattern), for each of which five measurements are required. The fact, however, that for the examination of the region of the dentition the first angle required is the angle of the inclination of the occlusal plane to the eye-ear plane, which belongs to the region of the facial skull, shows that here the necessary fundamental division into an examination of the dentition and one of the skull is carried out just as little as in all other measurements of the skeletal pattern.

The value for the angle between the occlusal plane and the eye-ear plane, as well as the angle between the Frankfort plane and the mandibular plane, from which the inclination of the occlusal plane (or, rather, of the base of the mandible) may be recognized can be fully understood only if they are divided, in the manner described above, into their gnathometric and craniometric parts.

These methods of diagnosis are therefore open to criticism, since they do not divide sufficiently the natural differences in the individual case ("the peculiarity of the individual type of architecture") from the deviations in the region of the dentition itself, which we wish to treat. Schwarz says: "In view of the great variety of the positions of the dentition as such in the skull it must be regarded as a fundamental mistake to define such anomalies by means of skull defining planes and points lying outside the region of the dentition."

In this connection, there is a wide interest in the different types of the so-called normal face. In a manner similar to that in which Schwarz differentiates between the anterior, average, and posterior faces, Izard speaks of the transfrontal, orthofrontal, and cisfrontal profile, Muzj refers to the angle profile and the linear profile, and Wylie and Downs speak of retrognathic, mesiognathic, and prognathic faces.

In the future it will probably be recognized to an increasing extent that during the analysis of the teleradiograph a sharp division should be made between the examinations of the dentition and of the skull.

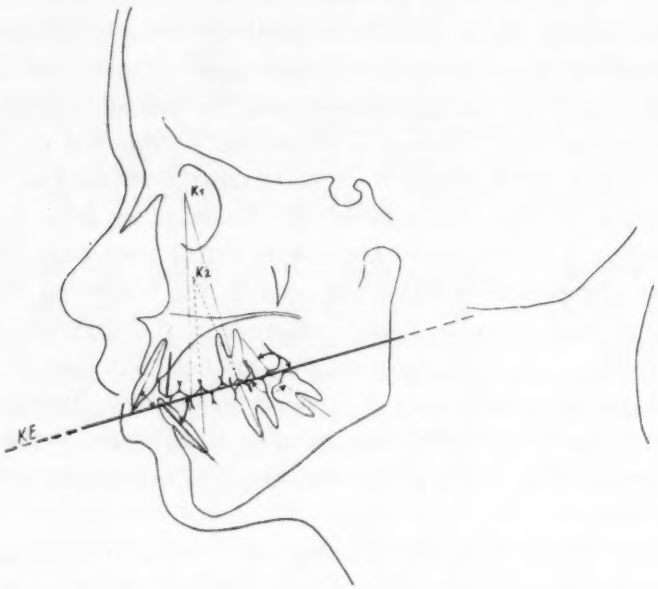
Taking into consideration the method for examination as explained, this analysis would then be carried out as follows:

A. The Gnathometric Examination

1. *The region of the teeth and alveolar bone in their relationship to the occlusal plane* (*Fig. 5*). This plane is defined by one-half the height of the overbite of the middle incisors and of the chief cusp of the first molar.
   (a) The angle of the axis of the upper incisors, canines, and first molars to the occlusal plane.
   (b) The angle of the axis of the lower middle incisors, canines, and first molars to the plane.
   (c) The extension of the longitudinal axis of the upper lateral teeth to form the upper dentitional cone (*K1*).
   (d) Extension of the longitudinal axis of the lower lateral teeth to form the lower dentitional cone (*K2*).
   (e) An examination of sagittal and vertical malocclusion.
   (f) An examination of a deviation in the ratio of the length of the root to the crown of individual teeth.
   (g) The position and development of tooth germs (for instance, of the canines and last molars, especially the third molars).
2. *The region of the entire dentition, that is, the position of the teeth and alveolar bones in relation to the jaws (plane of the base of the maxilla) (Fig. 6).*
   (a) The length of the plane of the base of the maxilla (nasospinale-spina nasalis posterior).
   (b) The length of the plane of the base of the mandible (gnathion-gonion).

(c) The upper angle of the occlusal plane (angle of the occlusal plane to the plane of the base of the maxilla). The average value is 8 degrees (Schwarz).

Fig. 5.



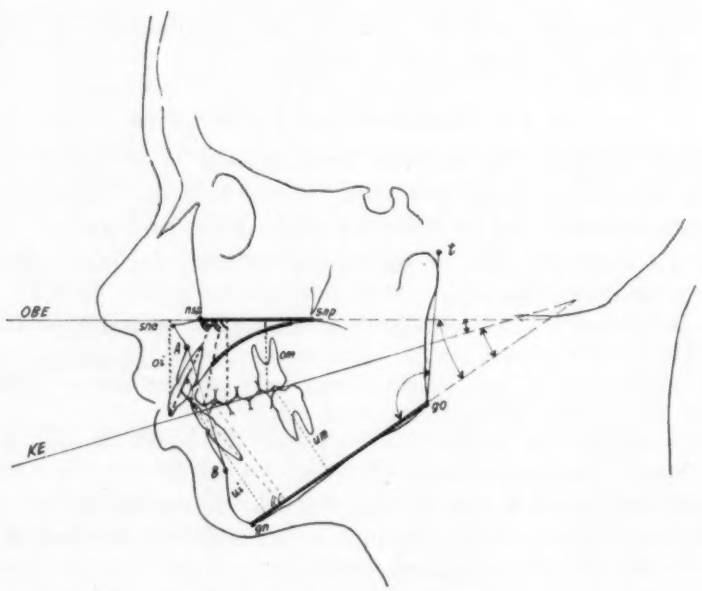


Fig. 6.

Fig. 5.—Analysis of the teleradiograph. Region of the teeth and alveolar arches in relation to the occlusal plane.

Fig. 6.—Analysis of the teleradiograph showing the region of the entire dentition, that is, the relationship between the teeth and alveolar arches and their jaws.

(d) The lower angle of the occlusal plane (angle of the occlusal plane and the plane of the mandible). The average value is 12 degrees (Schwarz).

(e) The angle of the base planes (angle between the plane of the base of the maxilla and the plane of the mandible). The average value is 20 degrees ± 5 degrees (Schwarz).

(f) The height of the maxilla and of the upper alveolar bone in the region of the middle incisor and of the first molar (perpendicular distance between the edges or the main cusp and the plane of the base of the upper jaw). The average ratio is 5 : 4.

(g) The height of the mandible and of the lower alveolar process in the region of the middle incisor and of the first molar (perpendicular distance between the edges or the chief cusps of the teeth and the plane of the mandible). The average ratio is 4 : 3.

(h) The angle of the longitudinal axis of the upper middle incisors, the canines, and the first premolars to the plane of the base of the maxilla. The average values of the angle, which is open in an anterior direction, are 70 degrees, 80 degrees, and 90 degrees ± 5 degrees.

(i) The angle of the axis of the lower middle incisors and canines to the plane of the mandible. The average values are 85 degrees and 90 degrees ± 5 degrees.

(j) The angle of the axis of the upper and lower middle incisors. The average value is 130 to 150 degrees.

(k) The ratio between the horizontal ramus and the ascending ramus of the mandible (gnathion-gonion : gonion-tragion). The average value is 7 : 5.

(l) The angle of the mandible (angle gnathion-gonion-tragion). The average value is 124 degrees. The angle formed by the tangent of the mandible has an average value of 123 degrees ± 10 degrees (Schwarz).

(m) The distance between the edge of the upper middle incisor and the AB line (Downs). The average value is 3 : 4 mm.

B. The Craniometric Examination

3. *The region of the entire facial skull, that is, the relationship between the dentition within the facial skull to the eye-ear plane (Fig. 7).*

(a) The angle of the plane of the base of the maxilla to the eye-ear plane (in the past, the "dentition angle" of Schwarz). According to the latest examinations, the average value is 5 degrees with a variability between –5 and +18 degrees. From this angle important details concerning the position of the entire dentition in the facial skull can be deduced (retroinclination or ante-inclination).

(b) The angle between the occlusal plane and the eye-ear plane. This angle represents the sum of the angles mentioned under 2 (c) and 3 (a).

(c) The angle of the plane of the mandible and the eye-ear plane. This corresponds to the Frankfort-mandibular angle (Downs) and represents the sum of the angles mentioned under 2 (e) and 3 (a).

(d) The entire profile angle (nasion-prosthion to the eye-ear plane).

(e) The angle of the nasal profile (nasion-nasospinale to the eye-ear plane).

(f) The relationship between the anterior points limiting the upper and lower alveolar bones and the bodies of the jaws: prosthion, A point, nasospinale, infradentale, B point, pogonion, and gnathion in their relationship to the various profile perpendiculars through glabella (skin point), nasion (bone point), and orbitale (skin and bone point).

(g) The relationship between the upper first molar and the processus zygomaticus-maxillae and the pterygomaxillary suture (projection distance to the eye-ear plane).

(h) The thickness of the soft tissues of the lower face (in the region of subnasale, laterale superius and inferius, supramentale, and chin) within the glabella plane and the orbital plane.

4. *Region of the entire head, especially the relationship between the facial skull and the cerebral skull related to the nasion-sphenoidal plane (Nasion-sella) (Fig. 8).*

(a) Length of the anterior and posterior base of the skull (nasion-sphenoidale and sphenoidale-tragion or nasion-sella and sella-tragion).

(b) The sphenoidal angle (angle nasion-sphenoidale-tragion). If one prefers to take the sella point instead of sphenoidale, the sphenoidal angle is defined by nasion-sella-tragion. Because recently it has been possible to recognize basion in a good teleradiograph, there is naturally no reason why the old sphenoidal angle, nasion-sphenoidale-basion, of Welcker should not be used.

(c) The nasion-base angle (nasion-sphenoidale or nasion-sella to the eye-ear plane). This angle corresponds to the I_2-angle of Schwarz. The average value is 3 degrees, and it can vary from –6 to +12 degrees. It is undoubtedly the most important angle for the definition of the positions in relation to the base of the skull.

(d) The angle between the plane sphenoidale-tragion (tragion-sphenoidale or tragion-sella) to the eye-ear plane.

(e) The angle of the plane of the base of the maxilla (nasospinale-spina nasalis posterior) to the nasion-sphenoidale-nasion sella plane (inclination angle of Schwarz). This represents the sum of the angles mentioned under 3 (a) and 4 (c). The average value of the angle which is open to the front is between 7 and 8 degrees with a possible variation of +18 degrees to –5 degrees (Schwarz).

(f) The angle nasospinale-nasion-sphenoidale (or nasospinale-nasion sella). This lays down the position of the anterior point limiting the base of the maxilla in the facial skull.

(g) The angle between the sphenoidale (sella point)—spina nasalis posterior plane and the nasion-sphenoidale (sella) plane. This lays down the position of the posterior limitation of the maxilla.

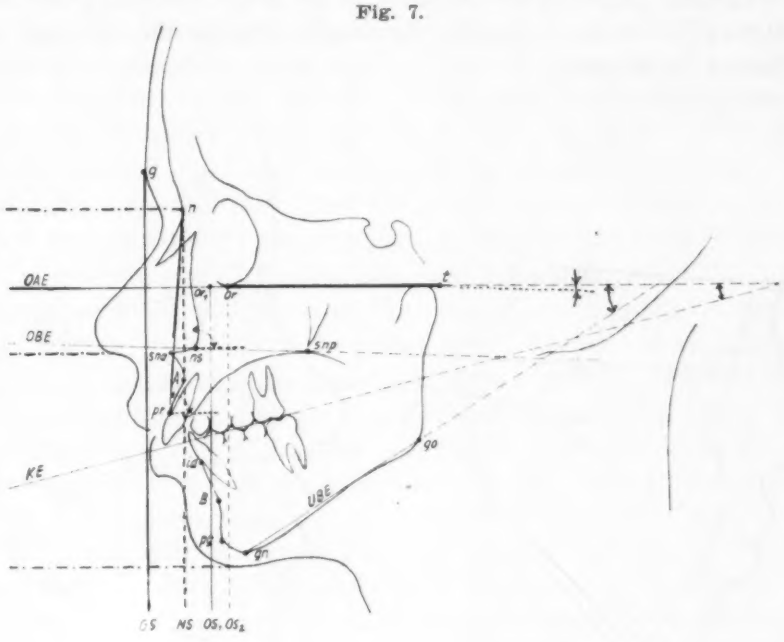
(h) The angle of the Y-axis plane (sella-gnathion of Brodie) to the eye-ear plane. The average value of the angle which is open to the front is 59.4 degrees with a possible variation between 66 and 53 degrees. This Y axis and the angle which it forms with the eye-ear plane are not only craniometric but also gnathometric, since the points which define these planes are situated in both regions. Nevertheless, this angle has sometimes turned out to be very valuable for the analysis of teleradiographs.

The analysis of the individual regions of the facial skull should naturally be carried out in three dimensions if possible. In this connection, however, the routine production and evaluation of teleradiographs taken from the front (posterior anterior teleradiographs in the direction of the eye-ear plane) present considerable difficulties. For various reasons, even when the teleradiograph machine is equipped with aiming devices which allow the taking of such radiographs in the norma frontalis, they are hardly ever used. Teleradiographs of this type are also hardly ever published. The systematic analysis also of the transversal relationships between the facial skull and the dentitions, either alone

or in combination with the vertical dimensions, is still in the initial stages. The sagittal and vertical relationships which the lateral teleradiograph reveals should, of course, be taken into consideration as much as possible.

If one carries out many such analyses, one recognizes that the angle relationships which can be observed in the different regions all influence the shape

Fig. 7.



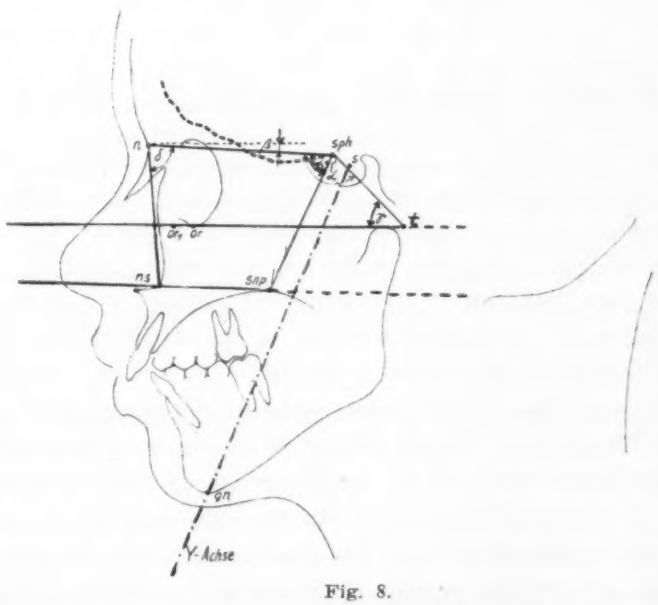
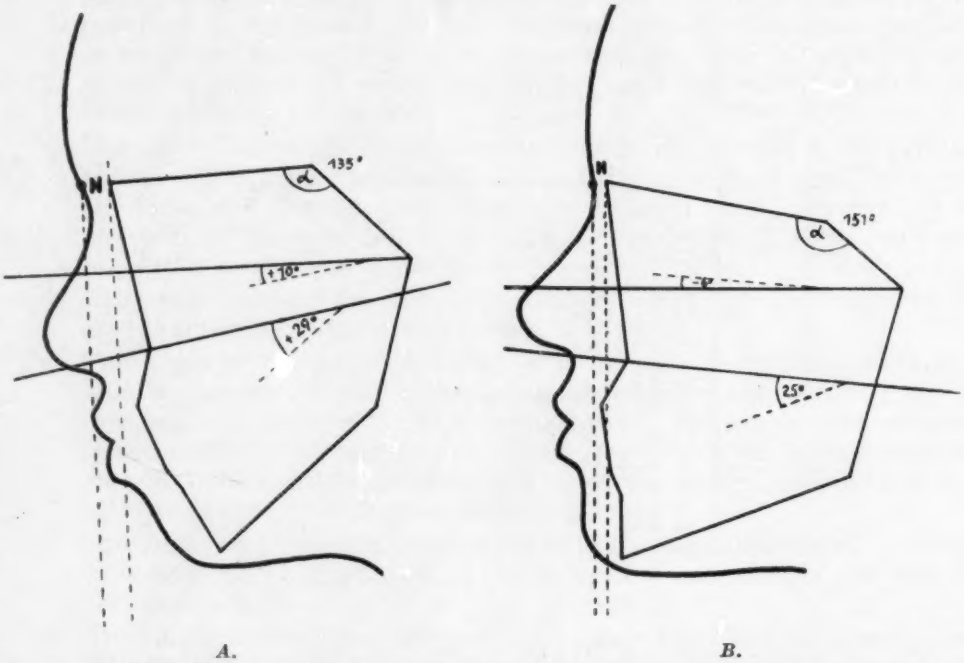


Fig. 8.

Fig. 7.—Analysis of the teleradiograph showing the region of the entire facial skull, that is, the position of the dentition within the facial skull related to the eye-ear plane.

Fig. 8.—Analysis of the teleradiograph showing the region of the entire head, especially the relationship between the facial skull and the cerebral skull.

of the profile of the lower face. The position of the facial skull in relation to the cerebral skull, defined by the sphenoidal angle and expressed especially clearly by the nasion-sphenoidal angle, as well as the inclination of the plane of the base of the maxilla to the eye-ear plane, the inclination of the occlusal plane to the upper base plane (upper occlusal plane angle), and the inclination of the mandibular plane to the occlusal plane (lower occlusal plane angle) can express themselves in many ways in the shape of the profile, in either a forward or a backward inclination.



A. *B.*

Fig. 9.—Different effects on the various regions of the face. *A*, Combination gives rise to a posterior position. *B*, Combination gives rise to an anterior position.

In individual cases these angles can be combined in various ways and have different sizes. According to the type of combination, their influence on the shape of the profile can be pronounced or less pronounced. In one case, for instance (Fig. 9, *A*), the influences at the various spots can add up to a backward inclination, so that despite anatomically correct occlusion there is a strongly retruding chin. In another case the values of the angles of the various regions of the facial skull can partly compensate each other (Fig. 9, *B*).

Also, in the comparison of teleradiographs of the same person, which have been taken at different ages, during the study of the normal or abnormal development of the facial skull and of the dentition, as well as in the checking of alterations produced by orthodontic treatment, the same points of view which strictly divide the craniometric from the gnathometric relationships are valid.

The question, of whether during the treatment of compression anomalies with distoclusion (Class II, Division 1) the entire mandible can be developed in an anterior direction or whether only an alveolar movement of the upper and lower teeth is involved is very interesting from the clinical standpoint.

Recently a number of papers on the subject have been published, but all of them attempt to answer this question by using planes drawn from the region of the facial skull into the region of the dentition. No clear result can be obtained since in this way the alterations of the entire facial skull, which take place during the treatment simultaneously with the alterations of the dentition during treatment, are not divided.

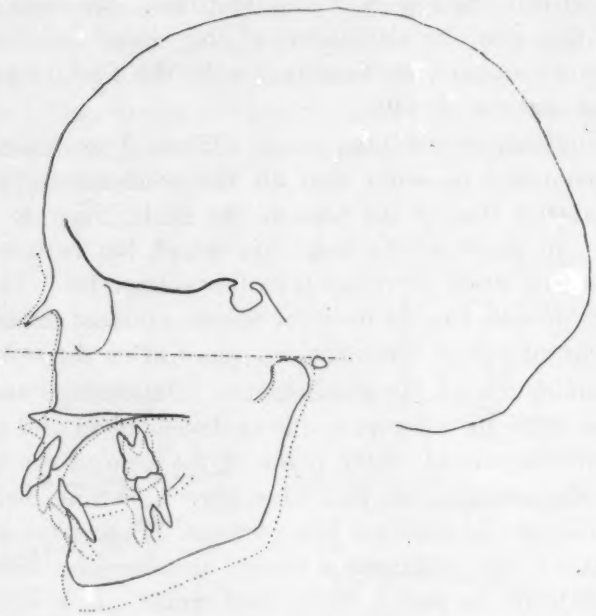
Here, too, division should take place. When it is desired that teleradiographs be superimposed in order that all the craniometric alterations can be observed, the anterior line of the base of the skull, Nsph or NS, can be used advantageously. In practice, the basal line which has here been suggested by De Coster has proved itself very useful in this connection. The line runs from the anterior edge of sella turcica over the spheno-ethmoid suture to the foramen caecum and apparently does not alter any more after the seventh year of age.

For the examination of the gnathometric relationships and the alterations which have taken place in this region due to development and orthodontic treatment, only a superimposition of the plane of the base of the maxilla can come into question. Fortunately, we also have here a similar, natural, and fairly constant line which can be used for this purpose. This is the sagittal curvature of the hard palate a few millimeters behind the foramen incisivum up to the region of the palate in the region of the first molar. It is known from genetic studies that this sagittal region of the palate is not affected by the development of the teeth and the growth of the alveolar bones. Brodie also has emphasized the high degree of consistency of this region of the floor of the nose and the palate. In the teleradiograph, at any rate, the same characteristic shape of this median oral plane of the palate can be recognized again and again, and a comparison of the effect of treatment by superimposing in this area immediately affords a completely different and clear picture. This process may be compared, to cite an example used by my teacher, Kantorowicz, to the repair of a damaged railway carriage which is no longer checked by means of complicated optical appliances from the stationmaster's office but by means of measurements carried out on the railway carriage itself.

The essence of these diagnostic examinations, whether they are limited to the actual region of dental arches and jaws or whether they deal with the relationship of the denture to the facial skull, is that they are of a purely descriptive nature. They merely ascertain the types of malocclusion present by improving the methods of measurement, they delimit them conceptually from others, and they name them. Unfortunately, the terminology employed by the various schools in the various countries and continents of our world is extraordinarily confused, so that our attention should be devoted to striving for a standard international terminology for the field of orthodontics. A careful analysis of individual cases in orthodontics produces a great number of individual symptoms, and these, when set side by side, are intended to represent the diagnosis of the general condition of the type of malocclusion in question.

Simon's classification, which may be designated as the most highly developed form of a purely descriptive classification, is also based on this extensive morphologic description. A clear over-all survey of any complicated anomaly can

Fig. 10.



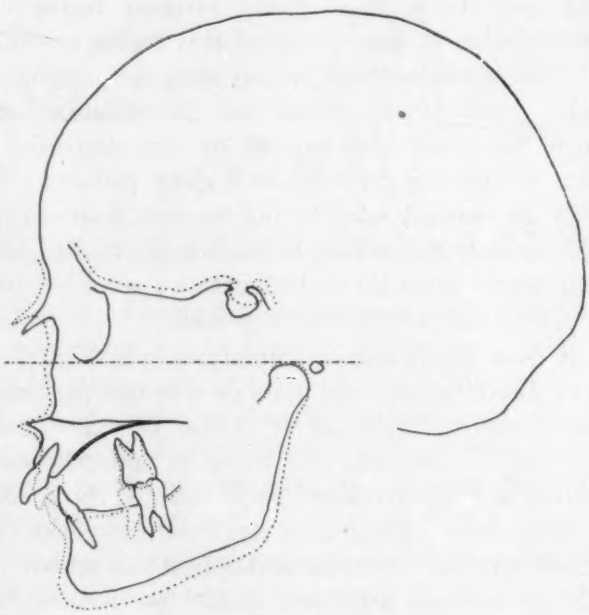


Fig. 11.

Fig. 10.—Tracings of teleradiographs of a case of Class II, Division 1 malocclusion before and after treatment. Craniometric examination. Superimposition of the basal line of De Coster.

Fig. 11.—Outline tracings of teleradiographs of the same case before and after treatment, superimposed in the sagittal curvature of the hard palate. Gnathometric examination.

hardly be successfully obtained in view of the multitude of characteristics which must be taken into consideration. Even the practical application of this classification offers considerable difficulties, however, since according to Simon twenty-four individual, separate features must be distinguished in a case of malocclusion and all of these features may be found together in any combination. By appropriate permutation, about 2,000,000 different types of malocclusion would thus be possible, and it would exceed the limits of human comprehension to survey this figure. This would require a classification far more complicated than Linné's system in botany, which is out of date today, or the cataloging of fingerprint cards in a card index of criminals.

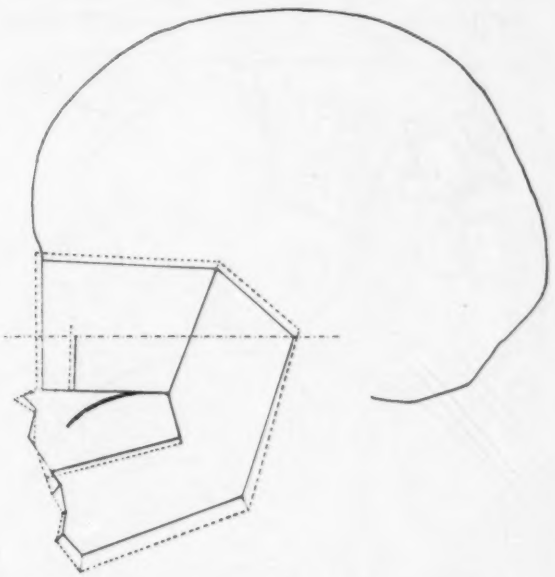


Fig. 12.—Diagram of the comparison shown in Fig. 11 demonstrating the effects of treatment. Note forward movement of the mandible.

It is very wrongly assumed that Nature produces a senseless profusion of such combinations of all the metric possibilities. Fortunately, this is not the case, as something which is theoretically conceivable need not necessarily occur in practice. Despite the multiplicity of endogenous and exogenous genetic factors, the group of clinical pictures in orthodontics is limited and must in each case be viewed as the result of anomalous influences exerted on the jaw mechanism. If one makes the origins of malocclusion (that is, the pathologic happenings) the focus of interest, a welcome elucidation of the internal relationships will result without undue difficulty. The initially incomprehensible simultaneous existence of individual factors is understood through their significant reciprocal coordination. This makes it essential that the diagnostic efforts of the orthodontist should not end with a morphologic description, however extensive it may be. The orthodontist must not be content with finding an answer to the "now," he must also consider the "why."

Fig. 13.

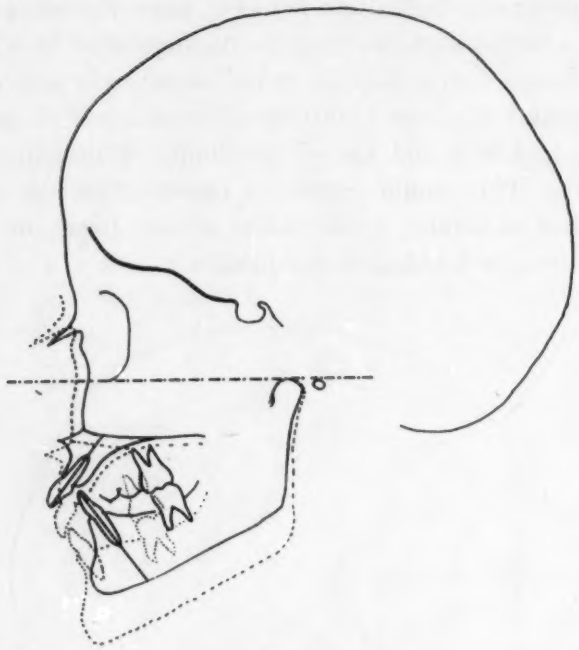


Fig. 14.

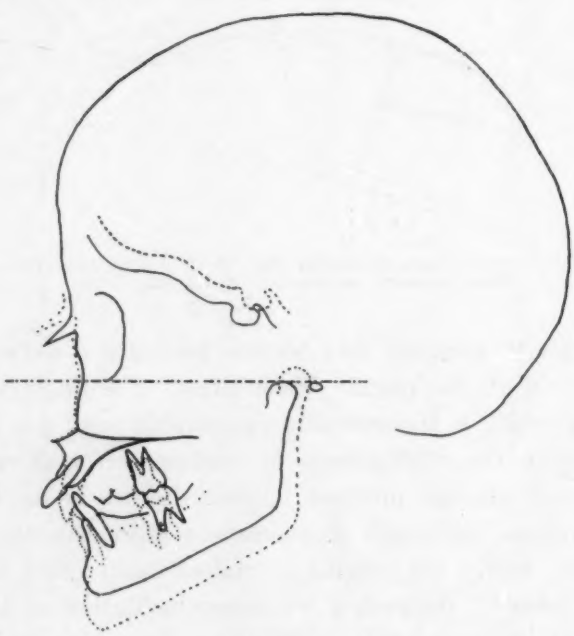


Fig. 13.—Outline tracings of the teleradiographs of a second Class II, Division 1 case, treated with extraction of the upper first premolar. Note superimposition of the basal line of De Coster. Craniometric examination.

Fig. 14.—Outline tracings of the same teleradiographs, but superimposed in the sagittal palatal curvature. Gnathometric examination.

Malocclusion and deformities of the jaw certainly do not represent a chance permutation of metrically ascertainable irregularities, which may by coincidence also occur in a second child. On the contrary, they form in each case a constructive unit in which the individual signs are related to each other internally in conformity to a rule. They are the clinical symptoms of dental anomalies and must be conceived as the sequel to definite courses of aberrant development which are often identical or similar. We consider measles, scarlatina, etc., diseases of definite etiology and origin, with a typical syndrome and course. In the same way, the dentitional anomalies also present a number of clinical symptoms in orthodontics which, being linked by the same cause and the same course of development, have led to similar changes in the shape of the denture and the facial skull.

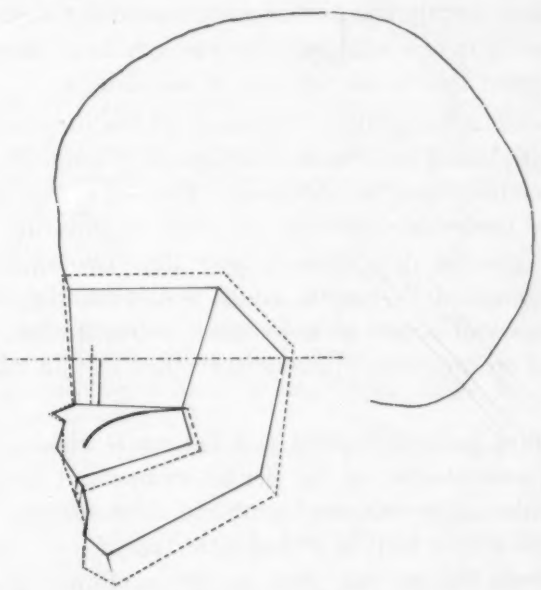


Fig. 15.—Diagram of the comparison shown in Fig. 14 demonstrating the effects of treatment. Good vertical development; no anteroposterior changes.

This genetic idea in regard to orthodontics, which was vigorously advocated above all by Kantorowicz, gained ground very slowly but steadily. This lack of understanding is rather remarkable, when it is considered that all the efforts regarding medical diagnosis of diseases are based on the elucidation of their etiological relationships. Modern medical science is trying, for similar reasons, to supplement the pathologico-anatomic diagnosis of the general condition by the more comprehensive biologic diagnosis (''reaction diagnosis'' or ''significance diagnosis''). For many years efforts have also been made in anthropology to set the causal-biologic approach side by side with the morphologic approach. (Fischer, Klatt, and Pfuhl). Nowadays, anatomy refuses to be content merely with the dismembering and morphologic description of the dead body; instead, it strives by means of observation and comparison to arrange the shape into ''units which have come into being and are functioning'' (Böcker).

Nowadays there is a general demand for more penetrating recognition of the normal and the abnormal appearances in relation to function and surroundings. Anyone who understands the rules of constructive relationships will fully comprehend the appearance of an organ, irrespective of whether it is to be regarded as normal, of high functional value, or as abnormal, deformed, and pathologic. Anomalies have been termed "the outward appearance of abnormal function," and this applies with a fair degree of justification to many types of malocclusion, since it is often a fault in the function of the masticating organ that leads to an abnormal development.

Therefore, the comprehensive diagnosis of a dentitional anomaly cannot rest with the ascertainment and description of many individual details. This is, moreover, no real medical diagnosis, no recognition of the clinical symptoms present. It is, rather, merely the preliminary work—the diagnostic examination. The genuine diagnosis is provided only by the synthetic survey of the anomaly in question which must follow the analysis of the details.

It is only by summarizing and evaluating all the individual symptoms from the genetic, functional, and esthetic aspects that full understanding of the whole make-up of the anomaly can be obtained. The diagnosis of the clinical case leads to a series of theoretic combinations, such as the duration, progress, and final state of the genetic development and the functional disturbances and cosmetic defects connected therewith, which will probably lead to the elucidation of further aspects of practical importance (constitution, individual type of reaction, etc.), and to the most appropriate (that is, the most adequate) kind of therapy.

This totality idea in orthodontics is a fortunate reminder of the fact that the therapeutic transformation of the dental arches and jaws is no mechanical matter but represents a *bio*mechanical problem. Stress must be laid on the first syllable. This applies also to late orthodontic treatment. In the case of early treatment the biologic component, that is, the exploitation of natural growth tendencies, will always take precedence over aid by artificial means. In the case of orthodontic prophylaxis, it is the exclusive tool.

GENETIC CLASSIFICATION OF DENTITIONAL ANOMALIES

The possibility of a "genetic classification" (Kantorowicz, Korkhaus, Schwarz) grows in proportion to the establishment of our knowledge of the etiology and origin of the various kinds of dentitional anomalies. Nowadays we know exactly at which early stage of infancy the first deforming influences are exerted on the development of the jaw and the destructive part played by rickets as the basis of certain anomalies. The effects of bottle feeding, thumb-sucking, an inadequate masticatory function, or accidents during the change of dentition, especially when the first permanent molars appear and when the incisors erupt, are all known to us, and reliable observations about the regular effects of the premature loss of teeth on the development of the jaws are available. Since also the research on twins has placed us in a position to differentiate between hereditary and acquired characteristics, surely an adequate foundation

is available on which a classification of dentitional anomalies according to genetic aspects can be built, although of course many individual questions may still require elucidation.

Upon primary investigation of the large groups of typical and constantly recurring anomalies, it will be found that these fortunately embrace a comparatively small and easily surveyed number of clinical symptoms. Among those predominantly due to *environmental* conditions are the compression anomalies, which can be subclassified according to the position of the upper incisors, and the stress deformities (open-bite) as well as the "results of loss of teeth during the development period of the jaw." Among the conditions predominantly due to *hereditary* causes are excessive overbite, progenia, and distoclusion. According to cautious estimates, these clinical symptoms, which are discussed in the following genetic classification, embrace more than 95 per cent of all cases referred for treatment.

Genetic Classification of Dentitional Anomalies

I. Compression anomalies (predominantly due to environment).
   1. Compression of the jaw with protrusion of the upper incisors.
      (a) Crowded.
      (b) Spaced.
   2. Compression of the jaw with crowding of the incisors (inhibition of growth with persistence of the tooth germs in their primordial position). Both types of compression anomalies can be coupled with neutroclusion, distoclusion, and unilateral or bilateral cross-bite.

II. Stress deformities: Open-Bite (predominantly due to environment).
   1. Open-bite due to sucking.
   2. Genuine open-bite (rickets) coupled with neutroclusion, distoclusion, or cross-bite.

III. Consequences of loss of teeth during the Development Period of the Jaw. Premature loss of deciduous teeth, loss of permanent teeth (predominantly due to environment).
   1. Inhibition of growth of alveolar arch.
      (a) In the upper jaw: "false progenia."
      (b) In the lower jaw: "false prognathia."
      (c) In both jaws: "bi-alveolar retrusion."
   2. Tooth movements.
      (a) Mesial movement by distal teeth.
      (b) Distal movement by mesial teeth.

IV. Progenia, genuine prenormal occlusion (predominantly hereditary) coupled with neutroclusion, mesioclusion, or cross-bite.

V. Excessive overbite (predominantly hereditary) coupled with normal occlusion or distoclusion.

VI. Genuine distoclusion without compression of the jaw and without excessive overbite (predominantly hereditary).

VII. Monocausal anomalies (due partly to environment and partly to hereditary).
   1. Consequences of abnormal primordial position of tooth germs.
      (a) Retention of teeth.
      (b) Eruption at the wrong place (exterior or interior position coupled with persistence of the deciduous predecessor).

2. Genuine diastema (persistent tectolabial frenulum).
3. Aberrations in the number or size of teeth.
   (a) Insufficient number of teeth or reduced size of teeth.
      (1) As the result of a phylogenetic reduction of the dentition (genuine shortage in number of teeth) or (2) as a sign of a disturbance in the development of the ectoderm.
   (b) An excessive number or size of teeth, duplications. (1) As a retrograde phylogenetic process ("supernumerary teeth"—genuine excess in number of teeth) or (2) separation from the dental lamina at the sutura palatina or incisiva (dentes emboliformes).
   (c) Disproportion in size between the upper and lower teeth.
4. Disproportion between production of the lamina and of the substance of the jaw.
   (a) Too much dental substance/too small a basal arch (bi-alveolar protrusion).
   (b) Insufficient dental substance/large basal arch (spaced denture).
5. Disturbances in the eruption.
   (a) Of the first molars (semiretention).
   (b) During the change of incisors.
   (c) During the change of lateral teeth.
   (d) Of the second and third molars.
6. Consequences of trauma at birth, injuries, cicatricial tension, formation of clefts, diseases of the mandibular joint, endocrine disorders (macroglossia in acromegaly), infantile osteomyelitis, tumors, etc.

A classification of the kind described, which is based on our present knowledge of the genetic relationship of dentitional anomalies, naturally cannot be complete and final, since our knowledge is constantly being supplemented. Changes and improvements must necessarily be made to keep in step with every advancement in our knowledge. The progressive and surely welcome attitude, which no longer merely measures but also evaluates, which does not go too far into details but understands the whole of an aberrant development, which treats not only fully developed single symptoms but combats the syndrome of clinical symptoms either prophylactically or with simple appliances if the case is in an early stage, speaks in favor of the genetic approach to orthodontics on which this classification is based.

(This is the first of a series of articles on present orthodontic thought in Germany. References will appear at the end of the final article.)

GROWTH AND TRANSFORMATION OF THE TEMPOROMANDIBULAR JOINT IN AN ORTHOPEDICALLY TREATED CASE OF PIERRE ROBIN'S SYNDROME

A Histologic Study

Louis J. Baume, D.M.D., M.S., Karl Häupl, M.D., and Rudolf Stellmach, M.D., D.D.S., Düsseldorf, Germany, and Geneva, Switzerland

EVER since orthodontics emerged as an integral part of dental science, much research has been devoted to determining the scope and limitation of its appliance therapy. Two schools of thought have developed. On the one hand, the great majority of American orthodontists hold to Angle's original concept that orthodontic treatment mainly induces changes in the position of the teeth in the alveolar bone. Hellman[13] demonstrated it by biometric means, and Brodie,[8] using serial cephalometrics, expressed it as the constancy of the inherited growth pattern. Most European orthodontists, on the other hand, have maintained since the time of Herbst and Robin that, with the help of bite guides, growth of the entire dentofacial complex can be controlled. Breitner,[7] in 1938, was the first to produce histologic evidence of experimentally induced transformations of the jaws, including the temporomandibular joint. Andresen and Häupl[1] applied Roux's[21] concept of the "morphogenetic property of functional stimuli" to orthodontics and established the methods of functional jaw orthopedics. Taking advantage of the natural muscular forces with the help of loose (passive) bite planes (activators), Häupl[10] and his many co-workers have presented abundant clinical and experimental evidence that, through functional stimuli, dentofacial anomalies can be transformed and corrected. Pålsson,[18] Björk,[5] Korkhaus,[15] Schmuth,[24] Hoffer,[14a] Macary,[17] and others, on the basis of cephalometric serial studies of treated Class II cases, sustain the view that growth adjustments take place not only in the alveolar bone but also in the supporting jaw structures, particularly the temporomandibular joint.

Only recently, and quite independently, similar arguments have been brought forward by American authors. The cephalometric and laminagraphic studies made during orthodontic treatment by Ricketts,[20] Boman,[6] and Foor reveal that substantial changes of the condylar head, which are not likely

From the Institute of Dental Medicine, University of Geneva, and the "Westdeutsche Kieferklinik" of the Medical Academy of Düsseldorf.

to occur without orthodontic intervention have taken place. Moreover, comparisons of serial cephalograms of Class II cases treated by Tweed have shown that this condylar response can be found over such a wide range of ages and to such an extent as to sustain the impression that, concomitant with the inherited growth, additional growth was elicited.[27] While Ricketts,[20] Sleichter,[25] and others locate these changes exclusively at the condylar head, Häupl[11] insists on the transformation of both the condylar head and the temporal fossa.

Evidence of such effects indeed would indicate a widening of the scope of orthodontic therapy beyond the self-imposed limitations to the alveolar process. It also would open new avenues leading toward our ultimate goal of preventive orthodontics. The entire profession therefore expects, as Wylie[28] has stated, a collaborative effort of the clinicians and laboratory workers to produce conclusive evidence with the help of "meaningful experiments but on any animal other than man."

It is the purpose of this communication to present, in compliance with this most difficult prerequisite, histologic evidence in man of orthopedically induced joint transformation of both components, namely, the condylar head and the glenoid fossa.

MATERIAL AND METHOD

This report concerns a newborn boy who was affected with Pierre Robin's syndrome of micrognathia, cleft palate, glossoptosis, inspiratory retraction of the sternum, and cyanosis.

The infant was first transferred in a cyanotic condition to a child health center, where the tongue was sutured to the lower lip (Douglas' operation). After four days, a tracheotomy was performed. Since respiration failed to improve and was aggravated by an infiltrating pneumonia, the child was transferred to the dentofacial surgery center.

With proper medication, oxygenation, tube-feeding, and expert nursing care, the child recovered satisfactorily. In order to alleviate the trouble that was causing extreme retrognathia, orthopedic therapy was instituted and continued for five months. The child then was transferred to the otorhinolaryngologic unit for removal of the tracheotomy tube and healing of the artificial opening. There the infant died suddenly after two months, apparently of a thymolymphatic condition which was found at autopsy. Both temporomandibular joints could be recovered and were made available for histologic analysis.

The pretreatment aspect is seen in Fig. 1. There was a sagittal overjet of 14 mm. between the upper and lower jaws, the infradentale lying as far back as the axis of the maxillary tuberosities. The plaster reproductions show the small mandibular arch and the cleft of the hard and soft palate (Fig. 2); both alveolar processes were intact. The cephalogram (Fig. 3, *A*) discloses a tongue of normal size, penetrating through the cleft into the nasal space. Due to its extreme retroposition, it impinged against the posterior wall of the pharynx.

The jaw orthopedic device in situ is seen in Fig. 4. It consists of a fracture-extension type of device which already has been used by Longmire and Sanford[16] for this purpose. The mandible was extraperiosteally wired in the symphysial region. With the help of the traction device, the mandible was protruded by a weight of 100 grams in alternate periods of two hours of traction and two hours of relaxation. After ten weeks, the intermaxillary sagittal overjet decreased from 14 mm. to 8 mm. The traction period then was reduced to two hours three times a day. Finally the treatment was interrupted for an entire week. After four months of treatment the gum

Fig. 1. Fig. 2.

Fig. 1.—Pretreatment photograph of newborn boy affected with Pierre Robin's syndrome. There is a fourteen millimeter sagittal overjet of the maxillary gum pad.

Fig. 2.—Plaster reproduction showing intact alveolar processes and a cleft in the hard and soft palate.

pads occluded in perfect harmony (Fig. 5). Orthopedic treatment was concluded after five months. The cephalometric film taken at the end of this period (Fig. 3, *B*) discloses a normal passage of the pharyngeal airway. Normal positioning of the mandible one month after complete removal of the appliance is evident from the profile and full-face photographs in Figs. 6 and 7, as well as from the cephalogram in Fig. 3, *C*. At this stage the mandible could not be displaced backward, even with force, more than 2 mm. Within a period of seven months the correction of the retroclusion thus had been achieved by enforced myofunctional therapy.

HISTOLOGIC ANALYSIS OF THE TEMPOROMANDIBULAR JOINTS AFTER TREATMENT

A midsagittal section of the left joint is seen in Fig. 8. The plane of the section of Fig. 9 is situated more medially, showing the insertion of the external pterygoid muscle at the condylar neck. From both sections it is evident that the articular components are well differentiated—the condylar head, the condylar capsule and the disc, the glenoid fossa with the articular eminence and the postglenoid process. The condylar head rests against the slope

A. B. C.

Fig. 3.—Lateral cephalometric roentgenograms taken at various stages of jaw orthopedic treatment. *A*, At the beginning of treatment; *B*, after five months; *C*, after nine months, when wire was removed.

of the articular eminence in a physiologic rest position. Already, at low magnification, immature trabecular bone is conspicuous in the region of the articular eminence and the postglenoid process, indicating an active stage of the development. At the center of the fossa there is a rather thin plate of compact bone. Loose capsular tissue is continuous with the dense structures of the disc. Both show no observable signs of traumatic lesions. The condylar head is capped by a wide cartilage layer; its greatest width is found at the posterior portion where apparently endochondral ossification is proceeding most rapidly. The capitulum is little delimited from the neck, indicating a juvenile form. At the anterior aspect of the ramus a distinct rarefaction can be seen, while the posterior wall consists of a continuous layer of rather compact bone.

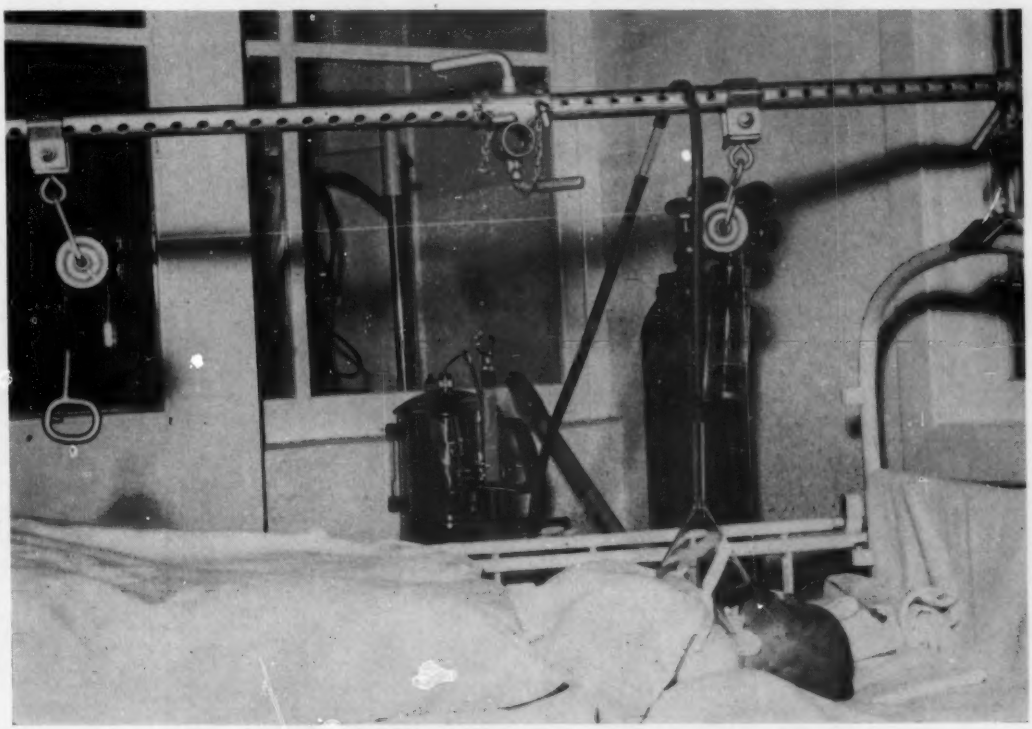


Fig. 4.—The jaw orthopedic device used for five months (see text).

Each of the articular structures mentioned will now be observed at a higher magnification.

1. *Temporal Bone.*—Rapid bone formation at the articular eminence proceeds by an embryonic mechanism of chondrosteal ossification (Fig. 10). A rim of hyaline cartilage is seen to delimit a meshwork of rapidly growing osteophytes. The abundant ground substance calcifies in the presence of osteoblasts into an immature, coarse, fibrillar bone. Highly vascularized fibrillar marrow participates in depositing and transforming the rapidly grown trabecular bone.

Fig 5.

Fig. 6.

Fig. 7.

Fig. 5.—After five months of treatment, the gum pads occlude in a normal position.
Fig. 6.—Profile photograph at the end of the treatment when the patient was 9 months of age.
Fig. 7.—Full-face photograph showing success of treatment.

These observations give evidence of a most active development of the articular eminence.

At the anterior wall of the articular fossa a regular seam of osteoblasts is aligned along a rim of newly formed, compact bone which is juxtaposed to the immature bone (Fig. 11).

Fig. 8.

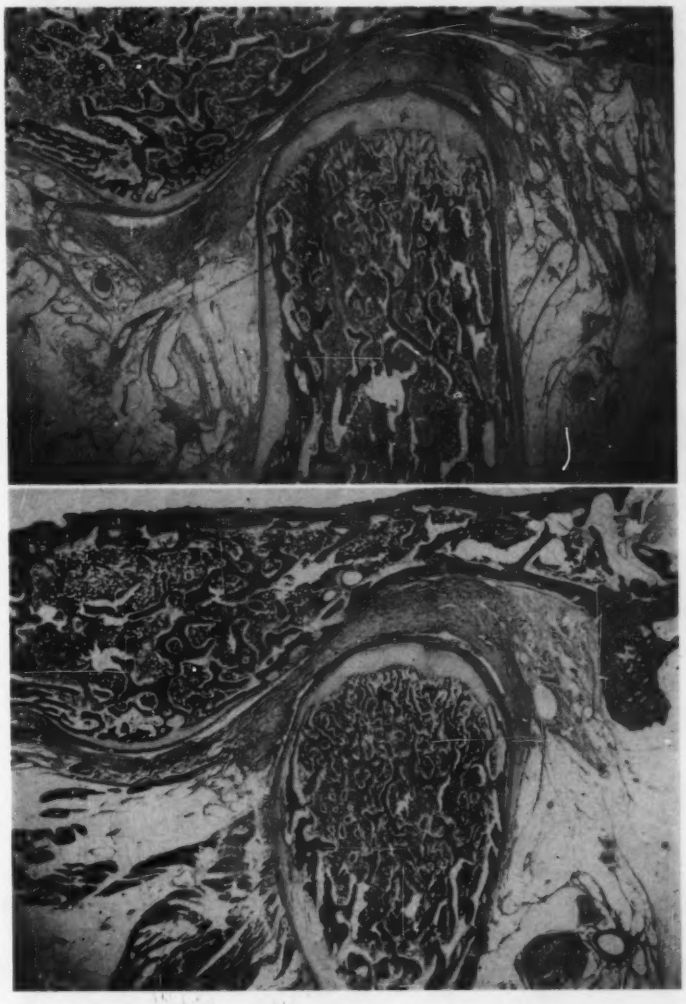


Fig. 9.

Fig. 8.—Midsagittal section of the left temporomandibular joint shows normal rest position of the mandible. Note osteophytes (*O*) in the region of the articular eminence. (For further details, see text.)

Fig. 9.—The section in a more medial plane discloses the site of insertion of the external pterygoid muscle at the condylar neck. Note the trabecular bone formation at the postglenoid process (*P*).

Toward the top of the fossa convexity, processes of resorption proceed at the outer articulating surface of this bony plate while apposition is taking place at its inner endosteal surface. The dense capsular tissue has a normal

Fig. 10.

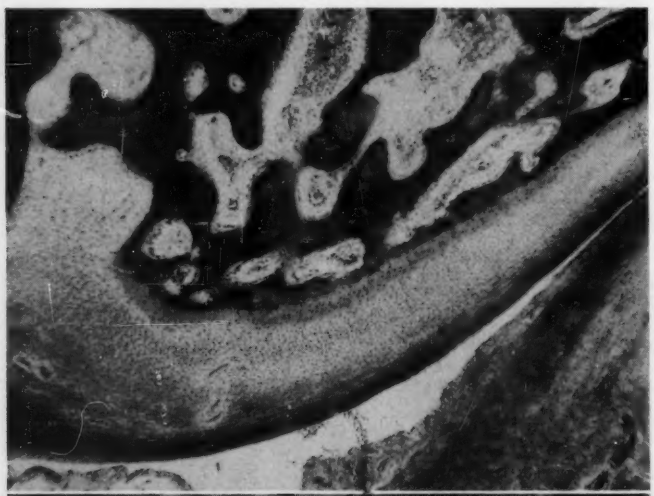


Fig. 11.

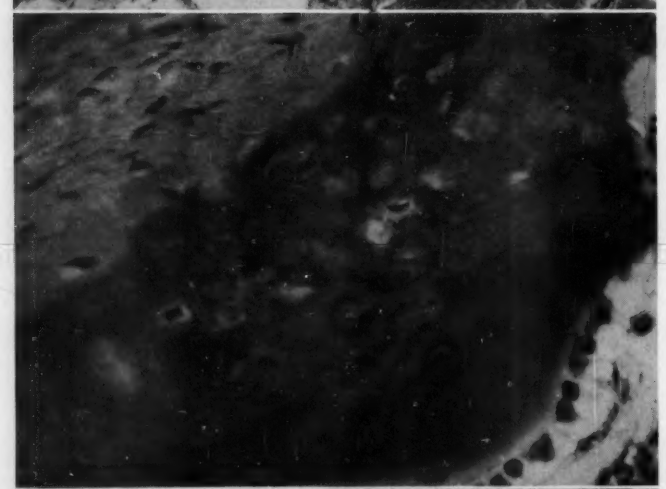


Fig. 12.

Fig. 10.—The osteophytes at the slope of the articular eminence are shown at a higher magnification.

Fig. 11.—At the anterior wall of the articular fossa, a seam of osteoblasts is aligned along a layer of newly formed dense bone; juxtaposed immature, coarse, fibrillar bone is seen.

Fig. 12.—Toward the top of the fossa convexity, the dense bony plate shows a continuous line of resorption at the outer articular surface and accremental lines at the inner medullar surface. Note complete absence of traumatic lesions of the capsular tissues, including the dense tissue of the disc.

appearance with no signs of traumatic lesions present. The remodeling processes in the articular fossa are seen as far back as the posterior border (Fig. 12). Here abundant trabecular osteogenesis indicates formations of the postglenoid process (Fig. 9).

Fig. 13.

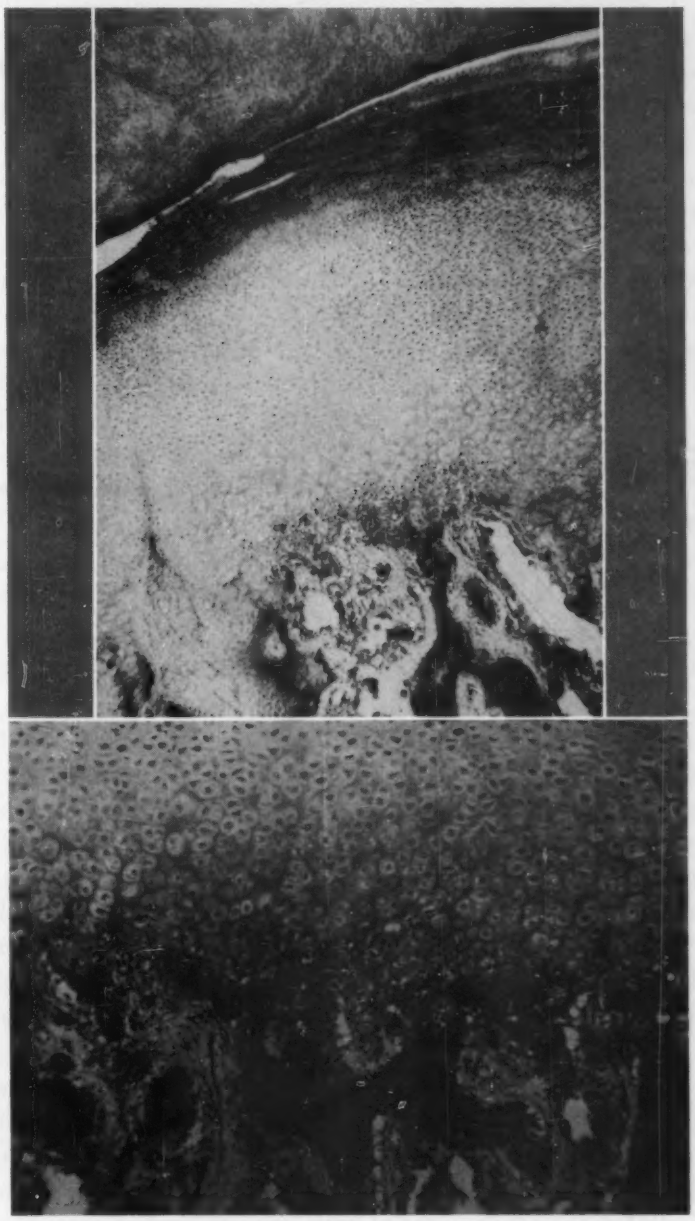


Fig. 14.

Fig. 13.—The fibrocartilaginous covering and the apparatus of endochondral ossification of the condylar head are shown. All capsular structures are intact.

Fig. 14.—At a high magnification, the zone of the enlarged dystrophic chondrocytes is seen juxtaposed to a zone of erosion. Capillary elements of the fibrillar marrow are penetrating into the chondrocytic columns while the calcified matrix is partly resorbed and partly transformed into bony trabeculae by an active process of endochondral ossification.

From these observations, it can be concluded that the articular fossa undergoes remodeling transformation which is concomitant with an anterior shift of the mandible. This transformation proceeds in a physiologic manner without any manifestation of traumatic injury in the connective tissue components of the synovial and fibrous capsules and articular disc.

2. *Mandibular Condyle.*—In Fig. 13 it is apparent that the covering of the hyaline growth cartilage consists of several layers of fibrous tissue; densely packed bundles of collagenous fiber contain flat fibroblasts. In the deep layer some chondrocytes are found. This fibrous tissue covers the entire articulating surface; no signs of compressive injury can be detected.

The broad hyaline cartilage shows the four typical zones of endochrondral ossification (Fig. 14). The indistinct embryonic zone intervenes between the fibrous covering and the columnar zone of basophilic chondrocytes. The zone of the vacuolated chondrocytes and calcified cartilage matrix is wide. Erosion proceeds at each end of the curved columns of the degenerated chondrocytes. The newly formed bony spicules still contain some calcified cartilage matrix; this is indicative of the great rapidity with which ossification has proceeded. The spongy bone shows little functional orientation, although modeling transformation is active throughout this ramal part of the mandible. The hematopoietic marrow shows prominent fibrillar components.

Throughout the anterior aspect of the ramus, processes of modeling resorption are observed (Fig. 15). New, rapidly formed, trabecular bone is deposited within the loose periosteal tissue at the posterior aspect (Fig. 16).

Medially, at the site of the insertion of the outer pterygoid muscle (Fig. 17), bone resorption is taking place; the connecting periosteum is wide and loose.

The sum of these findings indicates that a growth movement of the mandible is taking place in a backward, upward, and outward direction. The great width of the posterior portion of the cartilage and the trabecular type of bone deposited at the posterior border of the ramus give evidence of the extreme rapidity of both growth processes; while endochondral ossification engenders an increase in height, membranous ossification contributes to the lengthening of the mandible. Modeling resorption at the medial site of insertion of the external pterygoid muscle is concomitant with a growth movement of the condyle in a lateral direction, effecting the widening of the mandible.[2]

Fig. 18 shows a section of the right temporomandibular joint. The plane of the section coincides with the anterior and inner root of the zygomatic process, where some deep portions of the masseter muscle arise. The bone here is of the rapidly formed, trabecular type. The sharp spine represents the most medial part of the articular eminence; juxtaposed to the older, deeper-stained bone, a large layer of less calcified new bone is seen to form the articular eminence. The articular disc is quite thin but has a normal appearance. The mandibular condyle rests on the central portion of the eminence. The growth cartilage, which is of considerable thickness, shows its greatest width in the posterior section.

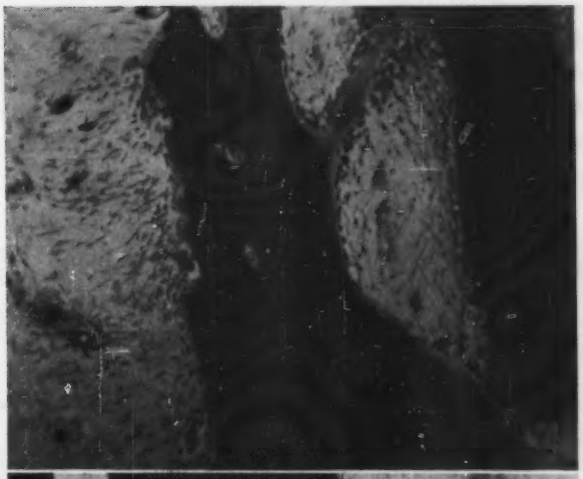


Fig. 15.

Fig. 16.

Fig. 17.

Fig. 15.—Processes of modeling resorption are seen at the anterior aspect of the ramus. Note the fibrillar marrow engaged in intramedullar bone transformation.

Fig. 16.—Rapid bone deposition at the posterior aspect is evident by the formation of osteophytes.

Fig. 17.—Modeling resorption is proceeding at the site of the insertion of the external pterygoid muscle.

At high magnification the same details can be observed as already described in the structures of the left side. It is of particular interest to note that the same processes of modeling resorption take place at the central and posterior articular surfaces of the fossa (Fig. 19). It is also seen that the synovial tissue of the articular capsule has a normal appearance with no signs of traumatic injury.

Fig. 18.

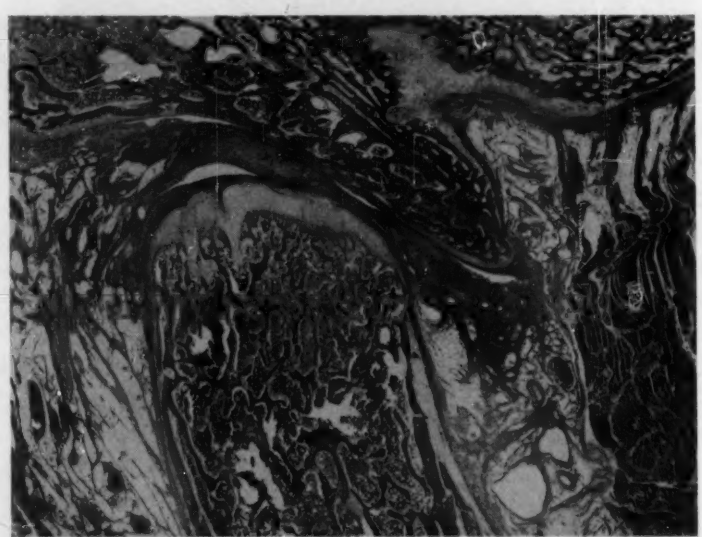


Fig. 19.

Fig. 18.—The over-all aspect of a section of the right temporomandibular joint shows trabecular bone formation at the articular eminence and inner root of the zygomatic process where the deep portion of the masseter arises. (For further details, see text.)

Fig. 19.—Osteoblastic activity is evidenced at the central and posterior aspects of the articular surface of the fossa. Note the entirely intact structures of the synovial and meniscal portions of the articular capsule.

DISCUSSION

In order properly to interpret the histologic findings of the temporomandibular joint structures of this treated case of Pierre Robin's syndrome, consideration must be given to (1) the changes which are due to normal growth,

(2) the growth to be expected in this type of dentofacial anomaly, and (3) the changes which are engendered by the orthopedic therapy that was applied.

Steinhardt,[26] in a histologic survey, has given a full account of the normal events involved in the development of the temporomandibular joint structures. The size and position of the condyle of the treated case presented herein seem to conform to these standards. Essential differences, however, are found when the histologic details are compared.

Pruzansky[19] and his co-workers (Beers, Lis, and Richmond) have made an excellent survey of untreated cases of Pierre Robin's syndrome with the help of serial cephalograms. They have shown that in most of their cases the micrognathic mandible was capable of a remarkable recovery in terms of growth. They concluded that the micrognathia in these cases was due to a disturbance in the rate of development rather than a permanent injury to the growth sites. The histologic data presented here corroborate this conclusion. The treatment instituted in our case evidently only accelerated but did not initiate the remarkable mandibular growth. A normal alveolar relationship was secured after five months, while Beers[4] noted spontaneous recovery in a one-year period. This, however, does not invalidate Pruzansky's recommendation that, if possible, treatment of Pierre Robin's syndrome be confined to lifesaving procedures in the perinatal period.

To our knowledge, this is the first histologic report concerned with an orthopedically induced transformation of the temporomandibular joint of a child. For purposes of comparison, we therefore must resort to the normal standards described by Steinhardt in man and to data gained from animal experimentation.

The growth phenomena observed in the mandibular condyle are consistent with the normal sequence of events. The great width of the cartilage in the presence of a completely "unsealed" zone of erosion is indicative of rapid chondrogenesis and osteogenesis; abundant trabecular bone formation proceeds at the posterior border of the ramus concomitant with modeling resorption along the entire anterior border. These growth changes obviously exceed the normal rate; stimuli released by the orthopedic treatment may account for them.

The same is true for the transformations observed in the temporal portion of the joint. They include the modeling resorption of the central and posterior portions of the glenoid fossa and the abundant trabecular bone deposition at the articular eminence and the postglenoid process. Similar observations have not been made in normal untreated cases in either man or animals.[14b, 23, 26] They are identical, however, in every respect with the observations reported by Breitner[7] in a young Rhesus monkey which, for eighty-seven consecutive days, had the mandible protracted with the help of overlays and intermaxillary rubber bands. They also are in perfect agreement with the histologic results obtained by Häupl and Psansky[12] in a baboon which for seventy days had the mandible protracted daily for two hours with an "activator." Hoffer and Colico[14b] more recently reported similar changes effected by fixed appliances in rhesus monkeys.

The profession so far has been very reluctant to recognize the validity of the practical conclusions drawn from these animal experiments.[3, 29] The main arguments were those of a difference between man and monkey with respect to the articular morphology, possible tissue response, and effects of appliance therapy. It was not until Boman, Ricketts, and Hoffer used the new technique of laminagraphy that condylar changes were seriously considered to be effected by orthodontic therapy. Concomitant changes in the articular fossa necessarily remained inscrutable to this approach. Nevertheless, some fifty years ago Gysi,[9] an expert in the field, showed by his simple recording method that changes in occlusion effect changes in the temporal portion of the joint. Wild and Bay,[30] in large skull material, confirmed Gysi's laws of mandibular leverage.

The histologic evidence herewith presented in man should support the orthodontic philosophy originally conceived by Häupl[11]:

> It is within the scope of orthodontic therapy to induce changes in both the periodontal and the articular structures.
>
> It is a matter of proper treatment planning to give preponderance to either the articular or the periodontal changes, or both.
>
> It is by means of functional stimuli of the musculature that transformations occur in the morphology and structure of bones. Activator bite planes are best suited to transmit these functional stimuli to the stunted dentofacial structures, although any orthodontic device may produce the effect.[22]
>
> It is up to the orthodontic profession to seize the full possibilities of the functional approach to certain dentofacial anomalies.

SUMMARY

An infant affected with Pierre Robin's syndrome of micrognathia was treated orthopedically at the age of 2 months. After five months of therapy, normal jaw relations were established. The child died of other causes at the age of 9 months. The histologic analysis of the temporomandibular joint revealed the following:

1. The temporal structures of the joint gave evidence of an orthopedically induced transformation in the sense of a forward displacement of the fossa by coordinated processes of bone apposition and bone resorption.
2. Absence of traumatic injuries of the capsular structures was noted.
3. The condylar head showed growth activity in the vertical and horizontal directions exceeding the normal rate.
4. These histologic peculiarities are identical with those described by Breitner, Häupl, and Hoffer in similarly treated experimental monkeys.

These observations lead to the following conclusions:

1. The scope of orthodontic treatment is not necessarily limited to transformations of the periodontal structures of the jaws. Even parts of the temporal bone may be influenced by orthodontic appliance therapy.

2. X-ray analysis does not reveal the entire picture of orthodontically induced growth changes. Animal experimentation remains an important aid for the bioassay of orthodontic therapy.

3. Häupl's functional jaw orthopedics takes best advantage of the morphogenetic property of functional stimuli (Roux[21]), although any other appliance system may produce the same effect.

REFERENCES

1. Andresen, V., and Häupl, K.: Funktions-Kieferorthopädie, Berlin, 1936, Hermann Meusser.
2. Baume, L. J.: Muskelansatz und Knochenwachstum, Schweiz. Monatsschr. Zahnh. **65**: 18, 1955.
3a. Baume, L. J.: Experimentelle Erforschung der Skelett-Morphogenese mit spezieller Berücksichtigung der Schädel-Entwicklung, Schweiz. Monatsschr. Zahnh. **67**: 673, 1957.
3b. Baume, L. J.: Le rôle de l'experimentation en orthodontie, Rev. belge sc. dent. **14**: 567, 1959.
4. Beers, M. D., and Pruzansky, S.: The Growth of the Head of an Infant With Mandibular Micrognathia Glossoptosis and Cleft Palate Following the Beverly Douglas Operation, Plast. & Reconstruct. Surg. **16**: 189, 1955.
5. Björk, A.: The Principles of the Andresen Method of Orthodontic Treatment; a Discussion Based on Cephalometric X-ray Analysis of Treated Cases, Am. J. Orthodontics **37**: 437, 1951.
6. Boman, V. R.: Research Studies on the Temporomandibular Joint; Their Interpretation and Application to Clinical Practice, Angle Orthodontist **22**: 154, 1952.
7a. Breitner, C.: Experimentelle Veränderungen der mesiodistalen Beziehungen der oberen und unteren Zahnreihen, Ztschr. Stomatol. **28**: 134, 1930; **29**: 343, 1931.
7b. Breitner, C.: Bone Changes Resulting From Experimental Orthodontic Treatment, Am. J. Orthodontics & Oral Surg. **26**: 521, 1940.
8. Brodie, A. G.: On the Growth Pattern of the Human Head From the Third Month to the Eighth Year of Life, Am. J. Anat. **68**: 209, 1941.
9. Gysi, A.: Beitrag zum Artikulationsproblem, Berlin, 1908, August Hirschwald.
10a. Häupl, K., Grossman, W. J., and Clarkson, P.: Textbook of Functional Jaw Orthopaedics, London, 1952, Henry Kimpton.
10b. Häupl, K.: Die Gewebsveränderungen unter dem Einfluss kieferorthopädischer Apparate. In Häupl, K., Meyer, W., and Schuchardt, K.: Die Zahn-, Mund- und Kieferheilkunde, Berlin, 1955, Urban & Schwarzenberg.
11. Häupl, K.: Zur Frage des kieferorthopädischen Gelenkumbaues, Fortschr. Kieferorthopädie **19**: 1, 1958.
12. Häupl, K., and Psansky, R.: Experimentelle Untersuchungen über Gelenktransformation bei Verwendung der Methoden der Funktionskieferorthopädie, Deutsche Zahn-, Mund- u. Kieferh. **6**: 439, 1939.
13. Hellman, M.: Some Biologic Aspects—Their Implications and Application in Orthodontic Practice, Int. J. Orthodontia **23**: 761, 1937.
14a. Hoffer, O.: Weitere Beobachtungen und Feststellungen an mit F.K.O. Apparaten beeinflussten Kiefergelenken, Deutsche Ztschr. Zahnh. **10**: 34, 1955.
14b. Hoffer, O., and Colico, G. L.: Le modificazioni dell' A.T.M. conseguenti a spostamento mesiale della mandibola, Rass. internaz. stomatol. prat. **9**: 27, 1958.
Hoffer, O.: Les modifications de l'articulation temporo-mandibulaire par l'action des moyens orthopédiques, L'Orthodontie franç. **29**: 97, 223, 1958.
15. Korkhaus, G.: Die kieferorthopädische Bissverlagerung; Zahn-, Mund- u. Kieferheilkunde, München, 1954, C. Hanser.
16. Longmire, W. P., Jr., and Sanford, M. C.: Stimulation of Mandibular Growth in Congenital Micrognathia by Traction, Am. J. Dis. Child. **78**: 750, 1949.
17. Macary, A. F.: Les modifications de l'articulation temporo-mandibulaire sous l'action des moyens orthopédiques, L'Orthodontie franç. **29**: 149, 227, 1958.

18. Pålsson, F., and Adler, H.: Den laboratorietekniska framställningen av funktionskäkortopedisk apparatur enl. Andresen-Häupl, Svensk. Tandl. Tidskr. **38**: 221, 1945.
19a. Pruzansky, S., and Richmond, J. B.: Growth of Mandible in Infants With Micrognathia, A. M. A. Am. J. Dis. Child. **88**: 29, 1954.
19b. Pruzansky, S., and Lis, E. F.: Cephalometric Roentgenography of Infants: Sedation, Instrumentation, and Research, AM. J. ORTHODONTICS **44**: 159, 1958.
20a. Ricketts, R. M.: Variations of the Temporomandibular Joint as Revealed by Cephalometric Laminagraphy, AM. J. ORTHODONTICS **36**: 877, 1950.
20b. Ricketts, R. M.: Various Conditions of the Temporomandibular Joint as Revealed by Cephalometric Laminagraphy, Angle Orthodontist **22**: 98, 1952.
20c. Ricketts, R. M.: A Study of Changes in Temporomandibular Relations Associated With the Treatment of Class II Malocclusion, AM. J. ORTHODONTICS **38**: 918, 1952.
20d. Ricketts, R. M.: Facial and Denture Changes During Orthodontic Treatment as Analyzed From the Temporomandibular Joint, AM. J. ORTHODONTICS **41**: 163, 1955.
21. Roux, W.: Gesammelte Abhandlungen über die Entwicklungsmechanik der Organismen, Bd. 1, Funktionelle Anpassung, Leipzig, 1895.
22. Salzmann, J. A.: Orthodontics—Practice and Technic, Philadelphia, 1957, J. B. Lippincott Company.
23. Sarnat, B. G.: The Temporomandibular Joint, Springfield, Ill., 1951, Charles C Thomas.
24. Schmuth, G.: Über Röntgenaufnahmen zur Untersuchung der Kiefergelenksveränderungen bei orthopädischen Massnahmen, Fortschr. Kieferorthopädie **19**: 1958.
25. Sleichter, C. G.: Some Effects of the Occlusal Guide Plane in the Treatment of Class II, Division 1 Malocclusions, AM. J. ORTHODONTICS **43**: 83, 1957.
26. Steinhardt, G.: Die Bedeutung funktioneller Einflüsse für die Entwicklung und Formung der Kiefergelenke (I. und II. Teil), Deutsche Zahn-, Mund-, u. Kieferh. **2**: 711, 1935; **3**: 173, 1936.
27. Stoner, M. M., Lindquist, J. T., Vorhies, J. M., Hanes, R. A., Hapak, F. M., and Haynes, E. T.: A Cephalometric Evaluation of Fifty-Seven Consecutive Cases Treated by Dr. Charles H. Tweed, Angle Orthodontist **26**: 68, 1956.
28. Wylie, W. L.: The Temporomandibular Joint as an Anatomic and Clinical Entity, Oral Surg., Oral Med. & Oral Path. **9**: 990, 1956.
29a. Wylie, W. L.: The Orthodontists—Innocent Bystander or Prime Mover in Facial Growth? Oral Surg., Oral Med. & Oral Path. **9**: 985, 1956.
29b. Wylie, W. L.: Orthodontic Concepts Since Edward H. Angle, Angle Orthodontist **26**: 59, 1956.
30. Wild, H., and Bay, R.: Die Gysischen Hebelgesetze am Unterkiefer Ihre anatomische Bestätigung und ihre Bedeutung für die Morphologie des Schädels, Schweiz. Monatsschr. Zahnh. **55**: 879, 1945.

OBTUNDANT EFFECT OF VIBRATION

FREDERICK W. SPAULDING, B.A., D.M.D., MANCHESTER, CONN.

INTRODUCTION

THIS is a report of the effect of vibratory force in reducing the discomfort commonly associated with activation of orthodontic appliances. It has been observed that relief to the patient accompanies the slight luxation of the arch wire around teeth which are painful because of a newly tightened arch wire.[1] The effect of vibration in lessening the pain of appliance activation was first noticed in connection with the use of heatless stones in smoothing arch and tie wires immediately after their adjustment. These observations prompted the use of an instrument which could provide an easily controlled vibratory force. On several occasions a vibrating hobby tool (110 volts 60 cycles A.C.) was applied, not directly but through the medium of the side of the forefinger holding the working end of the tool. There was apparent alleviation of discomfort to the patient when application was made to newly tightened arch wires and teeth.

Because a local mechanical obtundant to combat locally mechanically produced pain is logically preferable to that of a systemic analgesic, a clinical study was initiated to record the effect on patients of vibration with various appliances.

MATERIALS

A reasonably quiet and gentle dental vibrator (Fig. 1) was employed to provide the safe transmission of 60 cycle vibration directly to the metallic appliance or to the tooth itself. The "stimulator tip" of rubber was cut down to its firmer base, providing a controlled vibratory force to the sore tooth. It is evident that the method of application was empirical but seemingly acceptable to the children on whom it was tried. Mimeographed forms for thirty patients were prepared for the recording of information.

METHOD

Thirty patients were selected at random in the course of their treatment, and following several of their usual appliance adjustments the use of vibration was studied. For each use, information on the manner in which the vibrator was used and the reaction observed in the patient was gathered.

Manner Used.—The following factors were considered in vibrator application: (1) area of use, (2) direction applied, (3) pressure, and (4) approximate time (minutes). It was also noted whether or not the patient assisted in the vibrator's use and whether his prior reaction to its use was positive or negative.

Reaction Observed.—Response was recorded as subjective (or indirect) when there was a positive or negative answer to the questions: (1) "Does it help?" and (2) "Do you want more?"

Response was recorded as objective (or direct) when it was *spontaneous*, as (1) a visible change in the patient's countenance or (2) a verbal comment. An additional important objective sign noted was the production of enough relief of pain for the patient to accept reasonable activation of a given appliance.

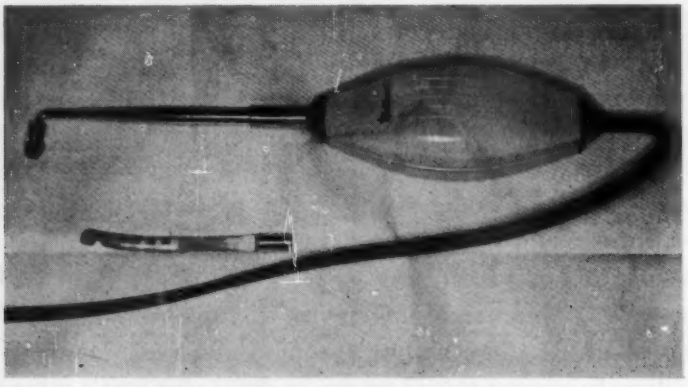


Fig. 1.—Vibrator used in this study. The handle houses the vibrator motor, and interchangeable tips transmit the force. The rubber tip (truncated) is in place; a less-used plastic tip is shown below.

FINDINGS

The following summarizes the reactions of the thirty patients to vibration:

Subjective (Indirect)

1. "How does it feel?" Twenty-six (86.7 per cent) said that it helped; three (10 per cent) were apathetic, and one (3.3 per cent) said that it gave no help.
2. "Do you want it some more?" After initial application of the vibrator (following adjustment), six (20 per cent) did and twenty-four (80 per cent) did not.

Objective (Direct)

1. Facial signs indicate relief in twenty (66.7 per cent) and nothing in ten (33.3 per cent). Further discomfort (a wince) of a very transient nature is seen frequently when the vibrator is first applied to any patient.
2. Unsolicited comments expressing relief were made by twelve patients (40 per cent). One (3.3 per cent) made an unsolicited comment expressing no relief, and seventeen (56.7 per cent) made no unsolicited comment.
3. As for the vibrator's effect on patients' tolerance to permit proper degrees of adjustment, tolerance was increased sufficiently in fourteen (46.7 per cent) but not increased in sixteen (53.3 per cent).

Additional Observations.—As the previous information was gathered, some general observations were possible in connection with the application of the vibrator.

Area of use: According to the patient's response, there is a "best place" for vibration, discovered by light massaging with the vibrator tip lingually, buccally, mesially, and distally. Often vibration in several places will bring some comfort.

Direction of application: Considered in relation to the applied force of the mechanics, the vibrator is usually most effective where it is opposed to applied force. This was especially apparent in Bull loop activated appliances. (Fig. 2).

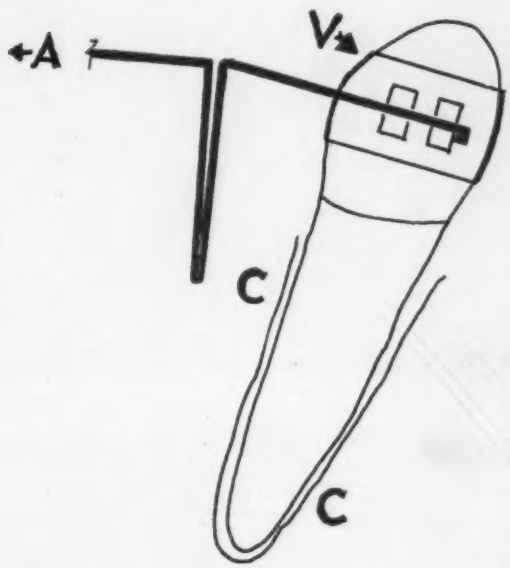


Fig. 2.—Diagram of a tooth under activation of a Bull loop. *A*, Direction of activation of appliance. *V*, Direction of vibrator tip application found most effective. *C*, Areas of periodontal membrane compression probably most relieved by vibratory force.

Pressure: The most comfortable pressure was estimated to be 1 to 3 ounces.

Time: An estimation indicated a range of one-fourth to five minutes (usually about one minute).

Patient's assistance: Patients competent to do so (fourteen of thirty studied, or 46.7 per cent) helped by applying the vibrator themselves. This is usually done after the "best place" has been located by the operator, as patients usually do not spontaneously sweep the vibrator from place to place. They will, however, apply the most comfortable amount of pressure to the selected area.

Prior reaction to vibrator: To condition a patient positively to the use of a "new instrument" on him, a semivoluntary acceptance of a trial is attempted by asking if he would "like to have that loosened a little." Of thirty studied, three (10 per cent) were in favor, sixteen (53.3 per cent) were

A.

B.

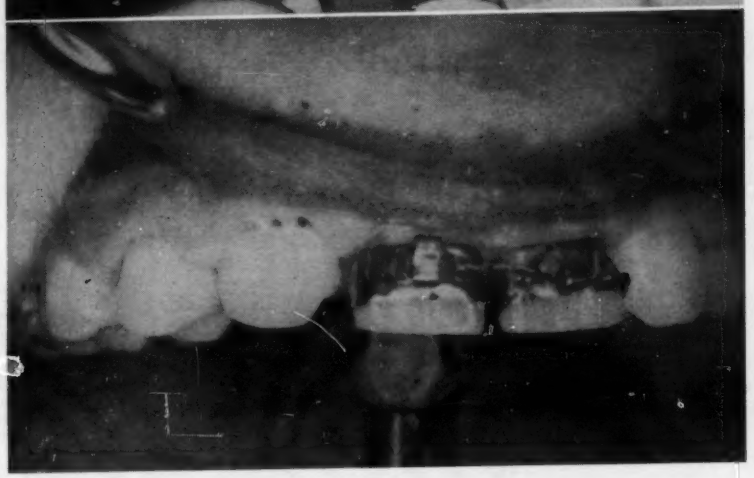


Fig. 3.

A.

B.

C.

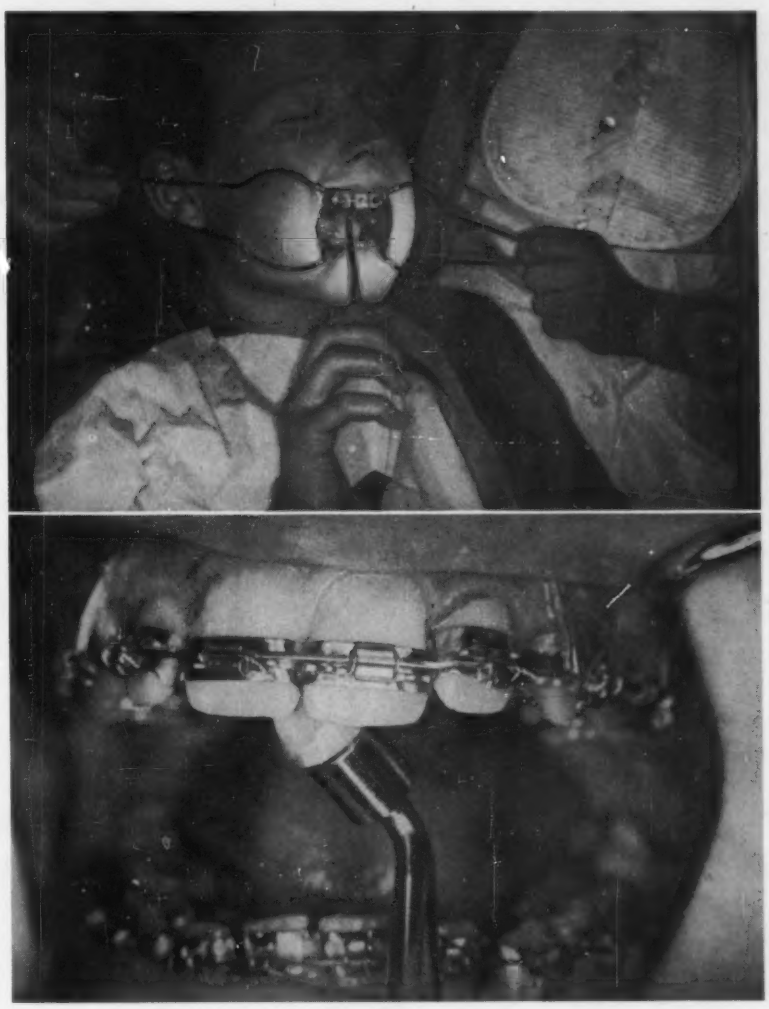
Fig. 4.

Fig. 3.—*A*, The patient applies the vibrator to the lingual surface of the central incisors after the latter have been ligated to close space. *B*, Close-up of *A*, showing tip applied to the lingual surface of a central incisor.

Fig. 4.—*A*, Patient in discomfort following activation of a rotation tie wire on a lower incisor. *B*, Facial relaxation commonly evident from vibration during activation of upper closing arch. *C*, Further close-up of *B*, showing vibrator application during and after activation.

not in favor, and eleven (36.7 per cent) were apathetic. The vibrator was used anyway with observed reactions. No ill effects were noticed, except that often there was a mild transient discomfort the moment that vibration was applied.

A.



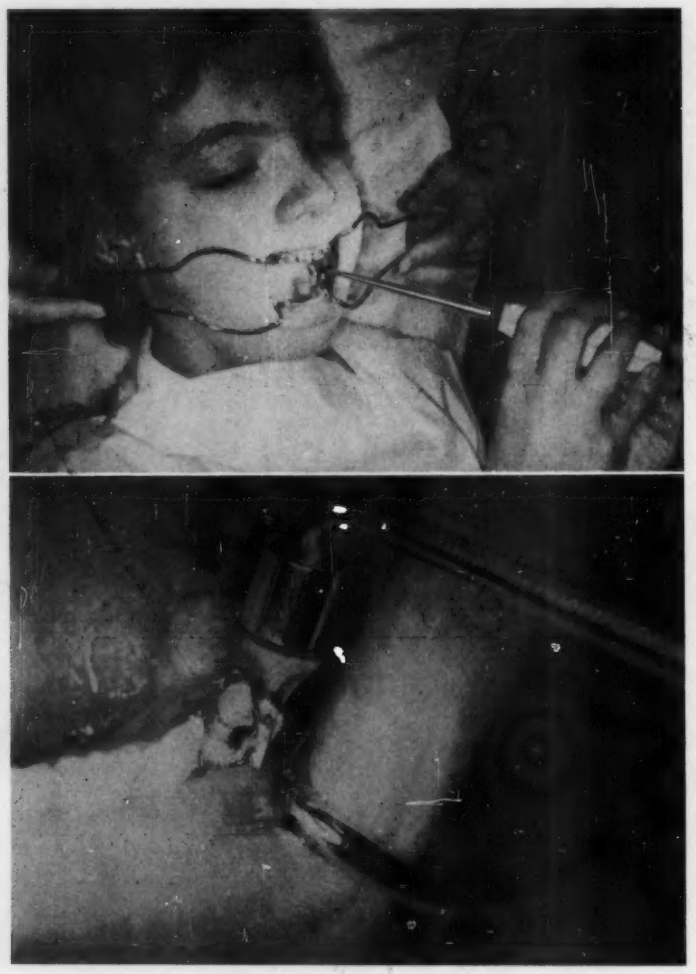
B.

Fig. 5.—*A*, Patient applying vibrator himself following activation of closing arch. Facial relaxation is evident. *B*, Close-up of *A*.

Acceptance by patient: It was noticed that, of the thirty patients tested, twenty-six gave subjectively favorable responses (upon questioning). This was put as simply as possible with such questions as "Did it help?" or "Does that make it feel better?" Experimenting with different vibrator techniques led to self-application by the patient in fourteen cases. When applied by the patient, the instrument was immediately placed upon or near especially tight teeth and connecting appliance wires. It is noted that even with subsequent tight adjustments in most cases the vibrator was not specifically requested; its use, however, even when not requested, seemed to make for greater comfort.

Of the twelve patients whom experience had shown to have low pain thresholds, eleven commented, without any questioning from the operator, that the vibrator helped give them comfort. Of the total of thirteen who gave this unsolicited response, eleven were in the so-called low-pain-threshold group. It is regretted

A.



B.

Fig. 6.—*A*, Patient applying vibrator herself following activation of sectional appliance acting upon the cuspid. *B*, Close-up of *A*.

that a suitable test was not available for the assigning of pain threshold. For practical purposes, however, past experience with a patient gives some index of this entity as compared with that of the remaining patients of the practice. There were "clinical advantages" associated with this low-threshold group, especially since ten of the low-threshold group of twelve and four of medium-threshold groups made up the total of fourteen patients who responded positively to give "clinical advantage," designating a sufficient alteration in the patient's adjustment tolerance to allow proper degree of appliance activation.

DISCUSSION

The obtundant effect can probably be explained in terms of a relieving of vascular stasis in the local periodontal areas of compression resulting from activation of the appliance. The alveolodental periosteum or periodontal membrane, being comprised of the cellular and intercellular elements of vascular, nerve, and connective tissue, is a building, nourishing, and reparative organ which is responsible, of course, for the phenomenon of tooth movement. This is dependent upon the repeated destruction and rebuilding of tissue in the path of the advancing tooth which, in turn, is dependent upon circulation in the area for the necessary cellular and intercellular elements to make this metabolism possible. The tissue blanching that results from finger pressure upon the gingivae may well be indicative of and analogous to a local periodontal membrane "blanching"—a squeezing-out of fluid tissue through such compression capillaries as have not been crushed and broken by the appliance action. It is often possible to see the gingivae blanch slightly as a result of a new adjustment to an adjacent tooth. The acute feeling of discomfort felt by a patient whose tooth has been forced in proximity with its bony alveolar wall is then postulated to be due to a local circulation interference, as well as a simple crushing of tissue. Thus, relief is quite possibly the result of re-establishment of limited collateral circulation through anastomosing capillaries.

Perhaps it is during this period of intramembrane stasis—before collateral capillary circulation can be established—that the patient's discomfort is most acute and that some intermittent or vibratory movement in the radicular area at least aids an intermittent circulation during and following the adjustments.

CONCLUSIONS

The results of this study suggest that a controlled vibratory force applied to teeth under newly applied orthodontic appliance force will often relieve acute discomfort therefrom.

The most effective direction from which to apply the force is against that of the active appliance.

COMMENT

It should be emphasized that no patients are completely relieved of discomfort by this technique. Indeed, some experience no relief at all, but apparently many are relieved somewhat. With the encouragement of this finding, future study at Tufts University may be warranted with varying frequencies of vibration and methods of application.

REFERENCE

1. Greenstein, A. V.: Lecture notes, Tufts University Dental School, 1953.

433 Main St.

NOTHING IS WRONG WITH ME—EVERYONE ELSE IS CRAZY

B. G. Gross, Ph.D.,* Chicago, Ill.

THE most abused and distorted word in the King's English is "psychology." The movies, television, radio, and the slick magazines have recently become drugstore psychologists to the extent that we have been given the greatest collection of intellectual garbage ever inflicted on the American public. The idea that if we merely do this or that all will be peace and light, obviously, is nothing but cotton-candy philosophy.

All forms of communication have also dissipated anything that might closely resemble a definition of personality. Personality is everything that we think, feel, say, and do, and, whether we like it or not, what we think, feel, say, and do has one of two effects (always in a matter of degree). It attracts people to us in our entire gamut of behavior from birth to death, or it irritates and maybe repels people. Whether we like it or not, what we think, feel, say, and do determines what we can do, ought to do, should do, deserve to do, aspire to do, and will do.

In the field of applied psychology we are confronted with many weasel words, such as "human relations." The library shelves are bulging with books on human relations. They present a panacea for human ills, but human relations is not a method, a program, or a technique. It is a state of mind. Why worry about relations until we learn what it means to be human?

To see ourselves as others see us is difficult and decidedly painful. Physical pain is more acceptable. Most persons will do anything to avoid taking a good, long, penetrating, analytic look at themselves. For those interested in self-diagnosis, there are seven psychological "microscopes" that we can employ by asking ourselves seven questions.

The first microscope is called adjustability. *Can we, do we, or will we graciously accept the unpleasant situations of life?*

The psychologist asks, "Are you facing reality?" There seem to be two kinds of people populating this planet—(1) those who go through life complaining, grousing, whining, and witching and (2) those who go through life (if they cannot change, improve, or alter their environment) graciously accepting it. The mental hospitals are loaded with people who will not or cannot graciously accept the unpleasant situations in their environment.

Presented before the Central Section of the American Association of Orthodontists, Chicago, Illinois, Sept. 29, 1959.

*Industrial Relations Director, Y. M. C. A.

The second microscope is called attitudes. *Do we accept people as they are?*

Whether we like it or not, we are going to have to work and live with both stinkers and saints, but to what degree do we accept the stinkers as well as the saints? There is cause and effect in all human behavior. Behavior is formulated by the environment since birth. We cannot properly evaluate behavior by ignoring past and present environments. Do we live and let live? Do we suspend judgment? Do we give other people the benefit of the doubt? Every time that we criticize others for what they think, feel, say, and do, we become our own agents of destruction for, as sure as tomorrow's sunrise, this attitude refracts back to us. If we make no attempt to understand what lies behind what people think, feel, say, and do, then we are in need of a psychological fumigation.

The third microscope is called emotional control. *Are we grown up?*

I have known many children who were walking around in adult bodies because they could not, or would not, control the jungle of their emotions, the jungle of tooth, claw, and fang. We all have emotions—hate, fear, jealousy, worry, resentment, bitterness, anxiety. But to what degree do we control them? To what degree do we use the cerebral cortex which represents the main difference between the animals in the barnyard and the human species?

When we indulge in uncontrolled emotions there is tension, and when there is tension the biochemical balance of the body is completely disrupted, thus inflicting physical penalties. The medical journals can give you the full story; arthritis, rheumatism, colitis, ulcers, and many forms of heart disease are the rewards reaped by persons who live in a continuous emotional state. We become our own agents of destruction if we do not control the emotional jungles of tooth, claw, and fang.

The fourth microscope has to do with impulse control. *Do we think first and then act, or do we act and then think?*

We make most of our own trouble by what we say and do. The moralists and the slick magazines advise us to count to ten when we become upset. I suggest that the next time you have an emotional barrage that you count to a thousand and wait thirty days. Give the cerebral cortex a chance to operate.

The fifth microscope has to do with purposiveness. *Do we regularly and habitually take inventory of ourselves?*

A businessman would go broke if he did not take an inventory at least once a year. We all have assets; we all have liabilities. Do we know what these assets and liabilities are? We take inventories of our employees, friends, wives, and children. Do we know what *our* assets and liabilities are? Nobody can do everything well; everybody can do something well. There are psychological tools that we can use to make these inventories. Do we use them?

We all have particular talents and skills. Do we know what they are? Samuel Johnson said, "The unexamined life is not worth living." The two greatest words in the King's English are "know thyself."

You may be amazed at what happens to the men I work with after they take the time to complete an inventory on themselves. These psychological

tools (tests and measurements) are not infallible. Granted, they can be inaccurate. Granted, they have been abused. But they are better than a hazardous guess.

The sixth microscope has to do with self-integrity. *Do we graciously accept our own limitations and faults?*

Again, the hospitals are filled with people who cannot or will not accept themselves. One executive I know made himself miserable by taking on a particular job in his plant that he thought he had to do until he realized that it belonged to the man in the next office. What a change it made in his mental health when he realized that he had liabilities that somebody else could take over! Everyone can do something well; no one can do everything well.

The last microscope is sensitivity. *How do I operate—me first and you second, or me second and you first?*

We pay lip service to and prattle our prayers of piety about sympathy, kindness, compassion, understanding, mercy, justice, love, and truth. We can put it all into one word—"empathy." Do we really practice this? Do we place ourselves in the other fellow's shoes, realizing that there is cause and effect in all human behavior?

We pay lip service to the Golden Rule, but I think that it was hatched in the portals of hell. The epitome of hypocrisy is thinking, feeling, and saying one thing and then doing something else. Maybe we should re-word the Golden Rule as follows: "Think, feel, say, and do toward the other fellow as we would like to have him think, feel, say, and do toward us."

In summary, these seven microscopes are *adjustability* (acceptance of one's environment); *attitudes* (acceptance of people as they are); *emotional control* (control over what we think and feel); *impulse control* (control over what we say and do); *purposiveness* (taking inventories of ourselves); *self-integrity* (admission of our limitations); and *sensitivity* (practice of empathy).

Why should one be interested in the seven microscopes of self-diagnosis to become his own self-diagnostician? Allow me to give you a socioeconomic profit and loss statement.

This is the land of milk and honey. Automation and technology have given us Utopia. In the profit column of this socioeconomic statement we find pensions, hospitalization, profit-sharing, overtime, vacations, paid holidays, all kinds of insurance, employees' compensation, coffee breaks, seniority, social and recreational program, and now the G.A.W. (we pay them whether they work or not). This industrial society has given us such by-products as hi-fi sets, automatic dish washers, automatic washers and dryers, and power lawn mowers. To house all these things we live in the suburbs and, with credit buying, we enjoy swimming pools, three-car garages, and palatial homes. This is, indeed, Utopia. The Pharaohs of Egypt never lived so well.

But have you read the loss column of this statement? Labor turnover (persons who are emotionally disturbed) cost us $30 million last year. Absenteeism (persons who are emotionally disturbed) cost us $14.5 million. Accident-prone persons (psychoemotionally disturbed persons) cost us $50

million. Last year close to 60 per cent of all the hospital beds were filled with people who were physically ill due to psychoemotional conflicts. Out of every ten marriages last year, 4.9 ended in divorce or separation. Out of every ten children, 5.8 needed psychiatric care. Major crime cost us $13 billion.

Dr. Hepner studied 4,000 executives. Ninety per cent of their employees who were discharged were fired not because of lack of skills but because of their conflicts with others.

Dr. Eddington, in a twelve-year research project, found that 73 per cent of the executives claimed that there was no enthusiasm among their employees. (You can buy a man's time, but you cannot buy his enthusiasm.)

Gentlemen, how do you balance or interpret this profit and loss statement? What does it mean to you? It means to me that this industrial society, this fifth decade of the Twentieth Century, is morally bankrupt. We have lost our sense of values. We have become more interested in things than in ideas, more concerned with economic status than with spiritual values. And if you do not think that moral, ethical, and spiritual values are important to this industrial society, let me remind you that nineteen previous civilizations went by the board because men forgot what it meant to be human.

What can or should we do about it?

From everything that I have read and been told, every man, woman, and child must have esteem, recognition, and respect. To the degree that we use these seven microscopes on ourselves, we automatically give others what they must have to live happily on this planet—esteem, recognition, and respect. In this society we have depersonalized and dehumanized everyone, including ourselves. Something happens to the human spirit when we become obsessed with possessions. Possessions eventually possess the possessor. To give esteem, recognition, and respect is our major responsibility to every person with whom we come in contact, and this responsibility is discharged by our daily use of these seven microscopes of self-analysis.

Emerson said, "What you are speaks so loudly, I cannot hear what you say." May I paraphrase it? "What you are speaks so loudly, I cannot hear what you say. What you say speaks so loudly, I sometimes cannot see what you do, but what you do thunders so loudly, I cannot be but your enemy or your friend and slave."

In Memoriam

BENNO E. LISCHER

BENNO E. Lischer was one of the pioneers in the specialty of orthodontics in St. Louis, Missouri. At one time he was a teacher of orthodontics at the University of California, and he contributed some special lectures at the University of Michigan at about the time that Michigan started the first university-sponsored graduate school in orthodontics.

Dr. Lischer received the Albert H. Ketcham Memorial Award, and he served as dean of Washington University's School of Dentistry from 1933 to 1945. A graduate of the school in 1900, he served on the Washington University faculty for many years. An author and lecturer, Dr. Lischer served as president of the American Association of Dental Schools, the American Association of Orthodontists, and the St. Louis Dental Society. No doubt Dr. Lischer's most outstanding contribution to orthodontics was his translation of *The Diagnosis of Dental Anomalies* by Dr. Paul Simon of Germany. This book, which was dedicated to the American Association of Orthodontists, was regarded as the vehicle that introduced America to gnathostatics as an aid in diagnosis.

A more complete obituary of Dr. Lischer will be published in a subsequent issue of the JOURNAL.

Department of Orthodontic Abstracts and Reviews

Edited by
DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City.

Occlusal Equilibration and Temporomandibular Joint Dysfunction: By Nathan Allen Shore, D.D.S., Department of Surgery, New York Hospital—Cornell Medical Center, New York, N. Y. Philadelphia, 1959, J. B. Lippincott Company. 323 pages; 242 illustrations.

This volume contains much that should be of interest and direct aid to the orthodontist who considers the teeth whose position he is attempting to change as part of the stomatognathic system and not as independent entities. The biomechanics of tooth movement in function are discussed here from the biophysical, histologic, and physiologic aspects. Shore considers the teeth, periodontium, jawbones, neuromuscular system, temporomandibular joint, and all other components of the stomatognathic system as a unit.

Temporomandibular joint dysfunction is discussed in detail. The manifestations of occlusal trauma are explained, and differential diagnosis of temporomandibular joint diseases is presented. Roentgenography of the temporomandibular joint is explained and illustrated. Methods are given for overcoming the outstanding deficiency in temporomandibular roentgenography —the two-dimensional presentation of a three-dimensional object. The problems encountered in efforts to avoid masking of the joint through superposition of adjacent tissues are discussed, and indications are given for preventing them. Duplication of projections is included, so that changes in the joint during treatment may be observed. An important section is that on interpretation of temporomandibular roentgenograms.

Equilibration of occlusion in centric and eccentric ranges of articulation will be found to be of practical application as here presented. Concerning equilibration of malposed teeth and abnormal arch segments, the author states, "One of the first factors to be considered in the correction of malposed teeth or abnormal arch segments is the possibility of resorting to orthodontic movement. If this has been discarded as the therapy of choice, then occlusal equilibration can serve as a palliative measure."

Shore considers it imperative to mount the casts on an articulator in order to study the casts in their various excursive relationships.

This reviewer has called attention elsewhere to the necessity of giving due consideration to function in orthodontics. While the orthodontist has accepted his field of operation as a four-dimensional one, that is, a temporospatial one, he has shown a tendency to neglect the fifth dimension—function. "A complete concept of orthodontics," says Shore, "must include an evaluation of the dentition in function." Occlusal interferences with function can be greatly relieved in the mixed dentition as well as in the permanent by careful equilibration. Factors over which orthodontic appliances have no control, the author points out, are discrepancies of tooth size and shape, unequal wear of occluding surfaces, and poor dental restorations. We cannot agree that temporomandibular joint syndromes caused by deflection of the mandible from centric

relation cannot be aided by orthodontic means. Many patients have been helped by the elimination of malocclusions which produced centric relation deviations.

Orthodontists will find this an authoritative book of practical value. The illustrations are excellent, and the text shows careful editing.

J. A. S.

Clinical Dental Hygiene: Edited by Shailer Peterson, B.A., M.A., Ph.D., F.A.C.D., Secretary, Council on Dental Education of the American Dental Association; Associate Clinical Professor at Chicago College of Dental Surgery of Loyola University. Written by 18 well-qualified authors. St. Louis, 1959, The C. V. Mosby Company. 348 pages; 161 figures. Price, $6.75.

The demand for dental hygienists is growing rapidly from year to year. The over-all idea of the modern dental health team concept of dental practice is growing. The team is composed of the dentist, his auxiliary personnel, the dental hygienist, the dental laboratory technician, and the dental assistant.

Dental hygiene is now about fifty-one years old and the demand is increasing rapidly. The hygienist is licensed by the state in which she practices. There are now thirty-four dental hygiene schools. This is a large increase (more than 112 per cent) over the sixteen that were in operation in 1946.

About 1,000 hygienists are now graduated each year. About 75 per cent of all dental hygienists are employed in dental offices, 13 per cent in the public school systems, 6 per cent in public health services, 5 per cent in hospitals, and the remaining in university clinics and the Armed Forces.

Today there are several schools that require the entering students to have one or two years of college education. All of the dental hygiene programs today are conducted at the college level and lead to a college degree.

Clinical Dental Hygiene, which for the first time enables the reader to become thoroughly conscious of what this rapidly growing movement in dentistry is all about, includes the following features:

Descriptions and photographs to help the hygienist recognize, care for, and sterilize all kinds of instruments and laboratory equipment.

Photographs and diagrams that show how to select and lay out trays of instruments for each patient on the appointment schedule.

Discussions on how the hygienist can save the dentist time by more complete observation of the general systemic health of the patient when completing case history forms.

A full chapter on alternate methods of sterilization.

Discussions of appointment procedures and recall problems.

Easy-to-understand, but scientific discussions of the history and present-day use and theory of roentgen rays in dentistry.

The full procedures and chemistry of processing x-ray films.

A full chapter on the hygienist's role in preventive dentistry.

This book provides a revelation for the practicing dentist as to just what is going on in the way of a modern approach to dental practice. This reflects the team idea and the auxiliary approach to dental service.

The dental profession may well be proud of the fine job many of the dental hygiene schools are doing in educating a high caliber of young ladies as dental hygienists. If you are a practicing dentist, read Dr. Peterson's book and you will be surprised at what is going on in the new dental hygiene field of dentistry.

Oral Diagnosis: By Donald A. Kerr, D.D.S., M.S., Professor and Head, Department of Oral Pathology and Periodontia, University of Michigan School of Dentistry; Major M. Ash, Jr., D.D.S., M.S., Assistant Professor of Dentistry, University of Michigan School of Dentistry; and H. Dean Millard, D.D.S., M.S., Assistant Professor of Dentistry, University of Michigan School of Dentistry. St. Louis, 1959, The C. V. Mosby Company. 419 pages; 212 illustrations. Price, $10,00.

The approach in this volume is to present oral diagnosis from its functional aspect with regard to physiologic principles. Many of the mechanics of oral diagnosis, such as roentgenography, history taking, etc., have been omitted in favor of a presentation of principles of diagnosis along objective techniques. This makes the book of value to practitioners as well as students.

In addition to the description of the normal, the authors go on to the basic pathologic conditions found in the jaws, neck, and head. The clinical examination and general appraisal of the mouth are dealt with in detail. Diagnosis and treatment planning are presented. This book can be recommended for clarity and conciseness of the presentation of material which frequently is lost in much more voluminous texts.

J. A. S.

The Management of Oral Disease: A Treatise on the Recognition, Identification, and Treatment of Diseases of the Oral Region: By Joseph L. Bernier, D.D.S., M.S., F.D.S.R.C.S. (Eng.); Colonel, Dental Corps, United States Army; Chief, Oral Pathology Division, Armed Forces Institute of Pathology. Second Edition. St. Louis, 1959. The C. V. Mosby Company. 875 pages; 1031 illustrations; 5 color plates. Price, $15.00.

This volume presents documented evidence of the growth and progress of oral pathology which, until comparatively recent years, was the *terra incognita* of both medicine and dentistry. Of extremely practical value in the present edition, is the chapter on "The Interpretation of Signs and Symptoms," in which laboratory procedures, normal blood values, and the technique of preparation of biopsies are clearly outlined.

Other chapters contain discussions of the histology of the skin and mucous membrane, anomolies of the teeth, and the pathology of dental caries. The processes of inflammation and repair are explained from the theoretical and practical aspects. With regard to occlusal trauma, Bernier states: "There is no yardstick by which the resistance of a tissue to trauma may be tabulated, hence, cause-and-effect relationships are most difficult to assess. Attempts to interfere with these stresses, to bring about an improved histologic and biologic state in the periodontium often lead to a more severe alteration. Those who include 'occlusal adjustments' in their therapeutic procedures must always be aware of the vagueness associated with the forces involved, since only then will the extreme care that is indicated be taken."

Oral reactions to allergy and to drugs are considered, as are the oral lesions in deficiency and metabolic diseases. In the chapter on "Disturbances of the Maxillary and Mandibular Bones" are discussions of congenital, developmental, hereditary abnormalities, general bone disorders, and tumors of bone. Clefts of the lip and palate are mentioned in brief.

To the practitioner who is looking for a ready reference text, this book, with its numerous excellent illustrations, tables, and summaries, will prove of great value.

J. A. S.

News and Notes

American Association of Orthodontists

The fifty-sixth annual session of the American Association of Orthodontists will be held April 24 to 28, 1960, at the Shoreham Hotel in Washington, D. C.

The motif of the meeting will be international. There is no better setting for an "international meeting of minds" than our nation's capital. Washington is truly one of the most beautiful cities in the world. Little did the young Frenchman, Pierre Charles L'Enfant realize that his pencil sketches of the projected capital of a young nation would someday achieve a reality beyond his fondest hopes and dreams to become the "mecca" for world leaders in every field.

As you look over the program that has been developed thus far, you will surely find essays and clinics that are concerned with many of the problems that you encounter in everyday practice. You cannot afford to miss them.

Program Outline

Monday, April 25

9 A.M.	Invocation. Welcome. Response. President Anderson's Address.
10 A.M.	The John V. Mershon Memorial Lecture. Introduction by John W. Ross. PROFESSIONAL AND PUBLIC RELATIONS. C. Edward Martinek (U. S. A.).
11 A.M.	ASYMMETRIES OF THE TEETH, DENTAL ARCHES, JAWS AND SKULL AND THEIR ETIOLOGICAL SIGNIFICANCE. Anders Lundström (Sweden).
12:15 P.M.	Golden Anniversary Luncheon.
2:15 P.M.	Ketcham Award—Presentation and Response.
3:15 P.M.	RELEGATING TO APPLIANCES THEIR PROPER PLACE IN TREATMENT. Oren Oliver (U. S. A.).
4:15 P.M.	TISSUE BEHAVIOR DURING ORTHODONTIC TOOTH MOVEMENT. Kaare Reitan (Norway).

Tuesday, April 26

9 A.M.	ORTHODONTIC DOCTRINE AND MECHANICAL TREATMENT METHODS. C. Philip Adams (Ireland).
10 A.M.	THE IMPORTANCE OF AN ACCURATE ANALYSIS IN ORTHODONTIC DIAGNOSIS AND TREATMENT PROCEDURES. Charles H. Tweed (U. S. A.).
11:30 A.M.	First Business Meeting.
12:15 P.M.	Ladies' Luncheon.
12:15 P.M.	Past Presidents' Luncheon.
1:30 P.M.	Research Section of the A. A. O. Program. Report of the Second Cephalometric Workshop. Milo Hellman Prize Essay. Condensed Research Reports.

Wednesday, April 27

9 to 11:30 A.M.	General Clinics.
12 M.	Round-Table Luncheon.
2:15 P.M.	First session, Registered Attendance Lecture-Clinics.
3:45 P.M.	Second session, Registered Attendance Lecture-Clinics.

Clinics will be given during the afternoon by the following*:

C. Philip Adams (Ireland)
Philip E. Adams (U. S. A.)
C. F. Ballard (England)
P. Raymond Begg (Australia)
Newton de Castro (Brazil)
George B. Crozat (U. S. A.)
R. B. Dockrell (Ireland)
Samuel Fastlicht (Mexico)
Vernon Fisk (Canada)
Egil Harvold (Norway-Canada)
Rudolph Hotz (Switzerland)
J. H. Hovell (England)
S. J. Kloehn (U. S. A.)
B. S. Kjellgren (Sweden)
Gustav Korkhaus (West Germany)
Hugo Lager (Denmark)
Anders Lundström (Sweden)
C. Edward Martinek (U. S. A.)
Giorgio Maj (Italy)
Kaare Reitan (Norway)
Robert Ricketts (U. S. A.)
J. H. Scott (Ireland)
Arnold Stoller (U. S. A.)
Earl Shepard (U. S. A.)

Thursday, April 28

9 A.M.	Condensed A. B. O. Thesis: A FOUNDATION FOR CEPHALOMETRIC COMMUNICATION. Robert M. Ricketts (U. S. A.).
9:30 A.M.	THE CHALLENGE OF CLASS II MALOCCLUSION. Newton de Castro (Brazil).
10:30 A.M.	LIGHT WIRE TECHNIQUE. P. Raymond Begg (Australia).
11:30 A.M.	Final Business Meeting.
	Adjournment.

Hotel facilities are outstanding. Because of the expected large attendance, arrangements have been made with the Sheraton-Park Hotel, just one block away, for those who may not be able to obtain reservations at the Shoreham. In keeping with the importance of this meeting, and in order to permit you to gain the most possible from each contribution, arrangements have been completed for closed-circuit television to augment the usual channels of communication.

For a profitable, educational, and pleasant social experience, make your plans now to attend the 1960 meeting!

George M. Anderson, *President*
T. M. Graber, *General Chairman*
B. Edwin Erikson, *Vice-Chairman*
Paul V. Reid, *Program Chairman*
Paul Hoffman, *Local Arrangements Chairman*
Stephen C. Hopkins, Sr., *International Relations.*

*This represents a partial list.

The Lincoln Memorial, one of the many attractions to be seen in Washington, D. C., by those who attend the A. A. O. meeting there April 24 to 28, 1960.

American Board of Orthodontics

The next meeting of the American Board of Orthodontics will be held at the Shoreham Hotel in Washington, D. C., Monday, April 18, through Saturday, April 23, 1960. Orthodontists who desire to be certified by the Board may obtain application blanks from the Secretary, Dr. Wendell L. Wylie, University of California School of Dentistry, The Medical Center, San Francisco 22, California.

Applications for acceptance at the Washington, D. C., meeting, leading to stipulation of examination requirements for the following year, must be filed before March 1, 1960. To be eligible, an applicant must have been an *active* member of the American Association of Orthodontists for at least two years.

American Association of Orthodontists

Registration of Nonmembers for Attendance at Annual Sessions

To ensure full participation of all active members of the American Association of Orthodontists, the following classification of nonmembers eligible to attend and schedule of attendance fees, which will be charged at the time of registration, has been set up for the coming annual session of the Association at the Shoreham Hotel, Washington, D. C., April 24 to 28, 1960.

A. *No Attendance Fee.*

1. Full-time teachers in university dental schools.

2. Full-time graduate or postgraduate students in university orthodontic departments. It will be necessary to present a letter from the dean of the school certifying the status of the student.
3. Dentists from outside Canada or the United States of America who are members of recognized dental or orthodontic organizations.

B. *Attendance Fee—$10.00.*

1. Associate or junior members of constituent societies of the American Association of Orthodontists.
2. Recent graduates of university orthodontic departments who are in Government Service.

C. *Attendance Fee—$20.00.*

1. Recent graduates of university orthodontic departments who are not members of constituent societies of the American Association of Orthodontists.
2. Other guests.

Those persons who would be classified under the heading of C-1 or C-2 above are required to apply to the chairman of the Credentials Committee at least sixty days before the session for proper forms, which will require (a) written endorsement by two active members of the A. A. O. in the applicant's vicinity, (b) that the applicant be a member in good standing of the American Dental Association, and (c) that the applicant never has been rejected for membership in any of the constituent societies of the A. A. O.

Those persons who would be classified under the headings of A or B would be required only to submit credentials identifying themselves as being in one of these categories at the time of registration. Advanced reservations, which are by far most desirable, can be applied for by clearing one's credentials with the Credentials Committee by March 1, 1960.

Registration under categories C-1 and C-2 will, of necessity, be limited.

Daniel E. Shehan, Chairman
Credentials Committee
619 Medical Arts Bldg.
Baltimore 1, Maryland

Central Section of the American Association of Orthodontists

The Central Section of the A.A.O. held its annual meeting at the Sheraton Towers in Chicago, Illinois, Sept. 27 to 29, 1959, under the direction of Dr. John R. Thompson. The scientific program was as follows:

A Concept of the Interdependence of the Parts of the Functional Unit—the Masticatory Organ. Frank M. Wentz.
Malpractice Prophylaxis. Richard F. Rabe.
Light Differential Forces in Orthodontic Therapy. Joseph R. Jarabak.
Nothing Is Wrong With Me; Everyone Else Is Crazy. B. G. Gross (psychologist).
A Rational Approach to Open-Bite Therapy. J. William Adams.

The following table clinics were presented:

1. Max R. Kadesky, Dubuque, Iowa: "Thumb and Tongue Habit Breaker" and "Distal Movement of Cuspids."
2. R. V. Winders, Milwaukee, Wisconsin: "Centric Relation and Orthodontic Treatment."
3. James J. Guerrero, Chicago, Illinois: "Models and Slides of Treated Cases."
4. Howard Yost, Grand Island, Nebraska: "Plaster Cast and X-ray Photography."
5. Russell A. Hering, Milwaukee, Wisconsin: "Serial Extraction."

6. William H. Olin, Iowa City, Iowa: "Orthodontics for the Cleft Palate Patient."
7. Joseph R. Jarabak, Chicago, Illinois.
8. Glenn E. Jackson, Highland Park, Illinois: "Functional Occlusion."
9. J. William Adams, Indianapolis, Indiana.
10. E. H. Hixon, Iowa City, Iowa.

Great Lakes Society of Orthodontists

The annual meeting of the Great Lakes Society of Orthodontists was held at the Carter Hotel in Cleveland, Ohio, Nov. 29 to Dec. 2, 1959. The scientific program follows.

November 30

The Bull Technique—Its Philosophy and Applications. William R. Joule.
Laminated and Light Wire Forces. Will Thompson.
Diagnosis in Orthodontics—What We Know and What We Practice. J. A. Salzmann.
Force Control in Clinical Practice—an Analysis of Orthodontic Force. Morris Stoner.
Indirect Appliance Construction—an Original Single-Impression Multiple-Die Technique. John T. Lindquist.

December 1

Changes in the Soft Tissue Facial Profile Incident to Growth and Incident to Treatment. J. Daniel Subtelny.
Force Control in Clinical Practice—a Demonstration of the Technique to Obtain Maximum Efficiency in Tooth Movement. Morris Stoner.
Systemic Involvements in Orthodontic Diagnosis, Treatment Planning, and Prognosis. J. A. Salzmann.

December 2

Treatment Planning. Edward Martinek.
Refinements in the Begg Differential Force Light Wire Treatment. R. A. Rocke.

On Tuesday afternoon, December 1, six members of the staff of the Bunts Institute—Research Center of the Cleveland Clinic presented a program in which the first three discussed "The Dentist's Own Problems" (1. Orthopedics. 2. Eye Strain. 3. Peptic Ulcer). The other three staff members discussed "Significant Advances in Medicine" (1. Cholesterol. 2. Coronary Artery Disease. 3. Cardiac Surgery).

Table clinics were presented on Tuesday evening, December 1.

Middle Atlantic Society of Orthodontists

The Middle Atlantic Society of Orthodontists held its annual meeting at the Shoreham Hotel in Washington, D. C., on Oct. 4, 5, and 6, 1959. There was an attendance of 190, including 74 members, 19 associate members, 4 affiliated members, 24 students, 1 honorary member, 49 guests, and 19 exhibitors.

The theme of the meeting was "What Should Go on Before Treatment Is Started." Papers were read by Clifford L. Whitman, Everett Shapiro, and C. Edward Martinek on diagnosis, case analysis, and treatment planning. Later these essayists joined in a panel discussion moderated by B. Edwin Erickson.

The meeting also included a short talk and explanation of the A.A.O.'s new insurance program.

Table clinics on a variety of subjects concluded the meeting.

Social events included a cocktail party on Sunday. A luncheon on Monday featured Dr. Edward G. Latch, a well-known speaker. At this time we had as guests the president-elect of the A.D.A., our own Charlie Patton; the president of the District of Columbia Dental Society, Sam Leishear; and the Washington representative of the A.D.A., C. Willard Camalier. Monday evening was devoted to cocktails, dinner, and dancing. Our luncheon on Tuesday honored A.A.O. President and Mrs. George M. Anderson, and honorary membership was conferred on Dr. Wilton M. Krogman. At this time, fifteen active members and twenty-seven associate members were inducted into the Society.

The following men were elected to office for 1959-60:

President, Kyrle W. Preis
President-Elect, Paul V. Reid
Vice-President, William A. Giblin
Secretary-Treasurer, Charles S. Jonas
Editor, Stephen C. Hopkins, Sr.
Censor, Raymond C. Sheridan
Director to A.A.O., Louis E. Yerkes
Alternate Director, Paul A. Deems

Bob Splain was program chairman, and Harry Galblum was arrangements chairman.

Pacific Coast Society of Orthodontists

Headliner for the 1960 meeting of the Pacific Coast Society will be Dr. Samuel Pruzansky. The meeting will be held February 21 to 24 in Palo Alto, California.

In addition to Dr. Pruzansky, Program Chairman Eugene E. West has announced that Dr. Carl Ellertson, pedodontist from Palo Alto and a diplomate of the American Board of Pedodontics, will present a paper dealing with observations made by pedodontists and their patients of the orthodontist and his practice.

Southwestern Society of Orthodontists

The annual meeting of the Southwestern Society of Orthodontists was held Oct. 4 to 7, 1959, at the Shamrock Hotel in Houston, Texas, with the following officers in charge:

President, Marcus D. Murphey, Houston, Texas
President-Elect, John W. Richmond, Kansas City, Kansas
Vice-President, Bibb Ballard, Dallas, Texas
Secretary-Treasurer, Harold S. Born, Bartlesville, Oklahoma

Activities the first day covered registration, greetings, and the official social hour at the Poolside of the popular hotel. Also, there were those members who were interested in testing their technique and skill in golfing and skeet shooting and settling differences carried over from the previous meeting. At the Lakeside Country Club, Dean Strack of Dallas won the low score in the golf tournament, with Joe Peak of Austin a close competitor in the runner-up position. Low net score titles went to James O. Bailey of Wichita Falls and J. M. Reynolds of Lubbock. In the skeet-shooting contest George E. Raycraft of Houston won the all-events title, and the runners-up were H. R. Woolridge of McAllen and Arthur Bostick of Waco.

The ladies were welcomed by interesting and entertaining features provided for them in their reception at the Poolside of the Shamrock, by the Sherry Party, luncheons, and style shows, as well as the Hospitality Room and Continental Breakfast. As always, the main social event in which the ladies participated and played an important part in adding to the beauty and entertainment of the occasion was the reception and dinner-dance honoring President and Mrs. Marcus D. Murphey.

Following the opening preliminaries of the official scientific session, President Murphey presented his annual address. He outlined the plans of the meeting and gave extensive praise for the diligent work of the several committees responsible for the local arrangements. When a meeting progresses smoothly from beginning to end, it is realized that every committee member did his job well. That is the way the Houston meeting progressed, giving proof of President Murphey's superb ability not only as an organizer but as a master in conducting the several sessions.

The scientific program consisted of a series of lectures by Robert M. Ricketts on the general subject of "Clinical Cephalometrics" and Morris M. Stoner on "Force Control in Clinical Practice." (An outline of the lectures was listed in the October issue of the AMERICAN JOURNAL OF ORTHODONTICS.) Following their series of lectures, there was a panel discussion by Drs. Ricketts and Stoner on "Summary of the Application of Contemporary Ideas in Diagnosis and Treatment." Harold Born of Bartlesville, Oklahoma, one of our members, presented an excellent paper on "Aids in Case Presentation."

The exhibitors' display this year received favorable comment with respect to both number and quality.

The following testimonials were unanimously adopted:

THE SOUTHWESTERN SOCIETY OF ORTHODONTISTS

presents this letter to Mrs. Guy M. Gillespie in recognition of the outstanding contributions

GUY M. GILLESPIE

made for the advancement of orthodontics during his lifetime. Be it further known that the memory of this man will forever be written in the history of this Society.

Signed by Officers of Society

This testimonial was accepted by R. G. Turner, a close friend, in the absence of Mrs. Gillespie.

The high esteem in which his many friends in our membership hold for the late Archie B. Brusse found unanimous expression in the following resolution:

Because of his leadership, not only as President of the American Association of Orthodontists, but in many other professional activities,

DOCTOR ARCHIE B. BRUSSE

has earned this testimonial from the membership of the Southwestern Society of Orthodontists, an expression of their admiration for his vision, his dynamic energy and his profound wisdom, all of which were expended so devotedly to the profession of orthodontics.

Martin Brusse, his son, accepted the presentation on behalf of the family.

Robert E. Gaylord presented the twenty new associate members and asked that they be welcomed into the Society, and he urged them to take an active part in presenting clinics and other activities. The new associate members are as follows:

Clifford James Broussard, Houston, Texas
Jerry E. Cooper, El Dorado, Arkansas
William J. Hardin, Bartlesville, Oklahoma

William M. Hart, Corpus Christi, Texas
Jack A. Hill, Austin, Texas
Paul E. Huchel, Tyler, Texas
Robert F. Malone, Wichita, Kansas
James T. McDonald, Pine Bluff, Arkansas
Charles Dow Miller, Norman, Oklahoma
Charles William Nichol, Dallas, Texas
George L. Palmer, Dallas, Texas
Stanley Pastor, Tulsa, Oklahoma
Richard W. Radke, Mission, Kansas
Richard W. Ramming, Jr., Wichita Falls, Texas
Charles H. Reichart, Wichita, Kansas
Richard C. Ressling, Houston, Texas
Jack M. Richardson, Beaumont, Texas
Charles Shannon, Houston, Texas
James S. Torchia, Tulsa, Oklahoma
Harold G. Wright, Kansas City, Missouri

The total attendance figure of 198 represents 147 members registered, 16 certified guests, 23 students and members of other societies, and 12 non-fee-paying guests.

The roster of members of the Southwestern Society of Orthodontists is as follows:

Regular members	173
Associate members	44
Number under preceptor programs not ready for associate membership	12

New officers are as follows:

President, John W. Richmond, Kansas City, Kansas
President-Elect, Bibb Ballard, Dallas, Texas
Vice-President, Harold S. Born, Bartlesville, Oklahoma
Secretary-Treasurer, Tom M. Matthews, Dallas, Texas
Delegate to A.A.O., Nathan G. Gaston, Monroe, Louisiana
Alternate Delegate to A.A.O., J. Victor Benton, Wichita, Kansas
Sectional Editor, W. E. Flesher, Oklahoma City, Oklahoma
Qualifications Committee (three years), John H. Rogers, Wichita, Kansas

Joe D. Peak, Austin, Texas

William T. Chapman, El Paso, Texas, a charter member, was made an honorary member by unanimous action.

Suggestions were made by Fred Schudy and Ed B. Arnold that our membership be encouraged to write papers and prepare clinics for possible publication as a stimulus for self-development and advancement of orthodontics.

Our members voted unanimously to extend an invitation to the A.A.O. to hold its 1965 meeting within the confines of the Southwestern Society, possibly in Dallas or Houston. A survey by W. J. Schoverling indicated that there are adequate hotel facilities.

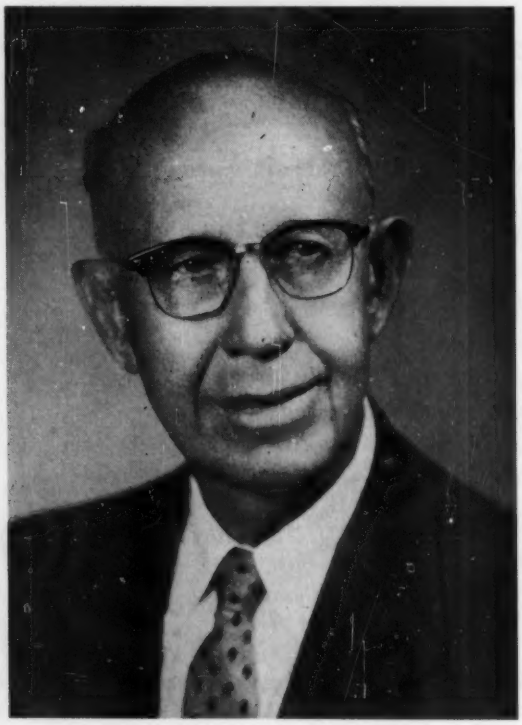
Dr. Richmond, upon taking over the gavel as incoming president, extended an invitation to hold the fortieth annual meeting in the Town House in Kansas City, Kansas, Sept. 25 to 28, 1960. This was unanimously accepted. The ad interim board meeting will be held at the Western Hills Lodge, Sequoyah National Park, June 4, 5, and 6, 1960.

Presentation of the Martin Dewey Memorial Award for 1959 to Emory Forris Woodring by the Southwestern Society of Orthodontists

A society is fortunate to have a member who will take on any job, however large or small, work at it diligently and cheerfully, and then quietly report its satisfactory completion. The Southwestern Society has such a man in Emory Forris Woodring, this year's recipient of the Martin Dewey Memorial Award.

The Martin Dewey Memorial Award was established in 1954 to honor the memory of Dr. Martin Dewey of New York City. Dr. Dewey had a particular affection for the Southwestern Society of Orthodontists and appeared on our program frequently, the last time being in Amarillo in 1932 when W. B. Stevenson was president.

The recipient of the 1959 Martin Dewey Memorial Award, Dr. Emory Forris Woodring, was born in Glenville, North Carolina, on Sept. 21, 1885, the son of Charles Luther Woodring and Sarah Arlenis Wilson Woodring. Dr. Woodring lost his parents when he was quite young and moved to Norman, Oklahoma, in 1894 to live with his Grandmother Wilson. There he attended grade and high school, following which he attended Western Dental College



DR. EMORY FORRIS WOODRING

in Kansas City, graduating in 1914. He opened his office for the general practice of dentistry in Frederick, Oklahoma, where he practiced until 1919, at which time he gave up general practice to attend the Dewey School of Orthodontia. On graduating from the Dewey School, he opened his office in Tulsa for the exclusive practice of orthodontics. He has practiced there since that time—more than forty years.

Dr. Woodring was married to Miss Ema Edna Davis in Oklahoma City in 1919, and they had one child, Sue (now Mrs. James Dunlap of Tulsa). Mrs. Woodring died in 1944.

Forris is a member of the American Association of Orthodontists, the Southwestern Society of Orthodontists, and the Oklahoma Orthodontic Society. He is a diplomate of the American Board of Orthodontics. He is also a member of the American Dental Association,

the Oklahoma Dental Association, the Tulsa County Dental Association, the Oklahoma Board of Governors, the Tulsa Masonic Temple, the Tulsa Southern Hills Country Club, and several civic clubs.

Dr. Woodring was president of the Southwestern Society of Orthodontists in 1942 and 1943.

It is with a great deal of pleasure that the Dewey Award Committee, acting on behalf of the Southwestern Society of Orthodontists, presents the Martin Dewey Memorial Award for 1959 to Dr. Emory Forris Woodring.

The Award certificate reads: "The Martin Dewey Memorial Award presented by the Southwestern Society of Orthodontists to Emory Forris Woodring in recognition of outstanding contributions to the advancement of orthodontics."

Acceptance of the Martin E. Dewey Memorial Award for 1959 by Emory Forris Woodring

The chief virtue of my remarks will be their brevity. In order to thank you properly for presenting the Martin E. Dewey Memorial Award to me, I would need the knowledge of a Daniel Webster and the words of a William Jennings Bryan. As I have neither, I can only say "thank you" from the bottom of my heart.

It was my great privilege to be in Dr. Dewey's office for four months. It was there that I received my orthodontic training. Dr. Dewey was very earnest and sincere in his teachings, and his criticisms were thorough and helpful. After a few months he entrusted to me the care and adjustments needed by his own patients when he was away at meetings. This practical phase of study was most advantageous to me. He often asked me if I would like to go as a clinician to New York where he was contemplating moving his school. However, I was too much interested in private practice to accept. After I had located in Tulsa, an occasion arose in which I had the privilege and pleasure of having a part in securing Dr. Dewey to speak on "Bone Growth and Development" at the meeting of the State Dental Association in Tulsa, Oklahoma.

While on the staff of a dental school in Kansas City, Dr. Dewey was a frequent and most welcome guest at our Oklahoma State Meetings. He was highly respected as an outstanding dental educator and contributed generously to our programs in Oklahoma.

I should also like to mention the late Dr. Lloyd Lourie, who was a fine man and an outstanding orthodontist. He maintained an office next door to Dr. Dewey, and we all had the opportunity to visit and discuss orthodontics in general, as well as cases under treatment. I particularly remember his discussing an extension from the lingual arch wire passing between the cusps of the first and second premolars, which curved upward and forward to engage a banded or pinned cusp. He used very few labial wires. My association with this fine man was also a privilege which I shall always remember in connection with Dr. Dewey.

Again, may I express my sincere thanks.

Archie Brusse Memorial Essay

The Denver Summer Meeting for the Advancement of Orthodontic Practice and Research, Inc. is sponsoring the Archie Brusse Memorial Essay, which is open to all 1960 graduate students of orthodontics.

An award of $100.00 will be paid for the best essay accepted by the Board of Trustees.

Essays must be received by the secretary (Eli H. Mullinax, 8790 West Colfax Ave., Denver 15, Colorado) on or before June 1, 1960.

Further information may be had by writing Dr. Mullinax.

New President-Elect of American Dental Association

—Robert H. Nones, Jr., Philadelphia.

Charles H. Patton, orthodontist, of Philadelphia, Pennsylvania, president-elect of the American Dental Association. Dr. Patton has been a specialist in orthodontics since 1919. He took his specialization training under the late Martin Dewey of New York and Andrew F. Jackson of Philadelphia. He is a member of various specialty groups, including the American Association of Orthodontists and the Middle Atlantic Society of Orthodontists, and is accredited by the American Board of Orthodontics.

Tufts University

Tufts University School of Dental Medicine, Department of Orthodontics, held its first annual Margolis Lecture and Meeting at the Hotel Statler-Hilton in Boston, Massachusetts, on June 12, 13, and 14, 1959. The following papers were presented:

Concept of the Soft Tissue in Aetiology and Treatment Determination. Clifford L. Ballard.

Developments in Clinical Orthodontics During the Past Twenty-Five Years. Charles H. Tweed.

Concepts Emerging From Recent Researches in Orthodontics. I. Allan G. Brodie.

Diagnosis in Orthodontics: Theory, Practice, and Future Trends. J. A. Salzmann.

Utilization of Inherent Growth in the Treatment of Malocclusion. Herbert I. Margolis.

The Begg Technic. Sidney Brandt.

How Scientific Serial Extraction of Teeth in the Mixed Dentition Substantiates the Validity of an FMIA of 69 ± 5° in Orthodontic Treatment Procedures. Charles H. Tweed.

Some Ideas About the Clinical Aspects of Oro-Facial Habits. Robert E. Moyers.

Concepts Emerging From Recent Researches in Orthodontics. II. Allan G. Brodie.

Tweed Foundation Contributes Funds for Conference on Growth

The Charles H. Tweed Foundation for Orthodontic Research (Ben L. Herzberg, president) has contributed $1,000.00 to a Conference on Growth, proposed by the Advisory Group

of the Research Committee of the American Association of Orthodontists (Herbert I. Margolis, chairman), which is to be held following the conclusion of the A.A.O.'s annual meeting in Washington, D. C., in the spring of 1960.

The American Association of Orthodontists, through its president, George M. Anderson, acknowledges with appreciation this financial assistance and looks forward to the results of the Conference as a further step in our scientific progress.

White House Conference on Children and Youth

The American Association of Orthodontists is among nearly 500 national organizations cooperating with the Golden Anniversary White House Conference on Children and Youth. Seven thousand delegates will receive invitations from the President of the United States to attend the Conference, which is scheduled for March 27 to April 2, 1960, in Washington, D. C. This is the sixth decennial conference to be held since President Theodore Roosevelt called the first one in 1909. Shared by all of the organizations is a concern for the health and general well-being of children and youth. The purpose of the Conference is "to promote opportunities for children and youth to realize their full potential for a creative life in freedom and dignity." The broad concerns of every national organization affiliated with the Golden Anniversary White House Conference will be included in some phase of the conference program during the week of March 27 to April 2, 1960.

Each delegate will be assigned to a work group of not more than 30, including lay and professional persons interested and active in fields relating to children and youth.

All members of the Council were invited to send two representatives to a meeting of the Council which was held Sept. 21 and 22, 1959, at the Department of Health, Education, and Welfare in Washington, D. C. Plans for participation of national organizations in the White House Conference were discussed and developed at that time.

Drs. J. A. Salzmann and B. Edwin Erikson were designated by President George M. Anderson to represent the A.A.O. on the Council of National Organizations of the White House Conference.

J. A. S.

Colonel Pearson W. Brown Is Assigned to Army Surgeon General's Office

Colonel Pearson W. Brown, DC, USA, recently became Assistant Chief of the Dental Division, Army Surgeon General's Office, in Washington, D. C. He will be assistant to Major General James M. Epperly, Chief of the Army Dental Corps.

Colonel Brown succeeds Colonel Leland G. Meder, DC, USA, who has been assigned to the U. S. Army Medical Service Combat Development Group at Walter Reed Army Medical Center in Washington, D. C.

After attending Davidson College in Davidson, North Carolina, Colonel Brown graduated in 1939 from Emory University Dental College in Atlanta, Georgia, with a Doctor of Dental Surgery degree. In addition, he has graduated from two military schools—the Command and General Staff College in 1952 and the U. S. Army War College in 1957.

Before coming to his present assignment, Colonel Brown was Director of the Department of Dental Science at the Army Medical Service School, Brooke Army Medical Center, Fort Sam Houston, Texas.

He was dental surgeon at Fort Hood, Texas, in 1956-57, and during the Korean War he was dental surgeon of the Eighth United States Army in Korea.

Reginald Williams Honored

A dinner was given in Buffalo, New York, on Nov. 18, 1959, by the Niagara Frontier Section of the American Institute of Mining and Metallurgical and Petroleum Engineers in

honor of Mr. Reginald V. Williams of the Williams Gold Refining Company in recognition of his many contributions to his profession.

Mr. Williams was presented with an award by F. J. Tone and Franchot Tone, Jr., in honor of their father.

Mr. Williams has appeared on programs of the American Association of Orthodontists a number of times, and his contributions have been published in the AMERICAN JOURNAL OF ORTHODONTICS. He pioneered some of the research in orthodontics in order to perfect materials more suitable for appliances to be used in orthodontics.

Dr. Clifford Glaser of Buffalo attended the dinner, representing the American Association of Orthodontists and paying respects to Mr. Williams' work in orthodontics.

1960 Milo Hellman Prize Essay Contest
American Association of Orthodontists

The 1960 Milo Hellman prize essay contest is announced.

Eligibility.—Any member of the American Association of Orthodontists and any person affiliated with a recognized institution in the field of dentistry, associated with it as a teacher, researcher, or undergraduate student, or associated with a dental division of any recognized general hospital shall be eligible to enter the competition.

Character of Essay.—Each essay submitted must represent an original investigation and contain significant material in the art and science of orthodontics.

Prize.—A cash prize of $500.00 is offered for the essay judged to be the winner. The committee, however, reserves the right to omit the award if, in its judgment, none of the entries is considered to be worthy. Honorable mention will be awarded to those authors taking second and third places. The first three papers will become the property of the American Association of Orthodontists and will be published in the AMERICAN JOURNAL OF ORTHODONTICS. All other essays will be returned to the authors.

Specifications.—All essays must be in English. They must be typewritten on 8½ by 11 inch white paper, double spaced, with at least 1 inch margins. Each sheet must be numbered and bound or assembled with paper fasteners in a "brief cover." Three complete copies of each essay, including all illustrations, tables, and bibliography, must be included. The name and address of the author must not appear in the essay. For purposes of identification, the title of the essay and the author's name, together with a brief biographical sketch which sets forth his or her dental and/or orthodontic training, present activity, and status (practitioner, teacher, student, research worker, etc.), should be typed on a separate sheet of paper and enclosed in a plain sealed envelope. The envelope should carry only the title of the essay.

Presentation.—The author of the winning essay will be invited to present it at the meeting of the American Association of Orthodontists to be held in Washington, D. C., April 24 through April 28, 1960.

Judges.—The entries will be judged by the Research Committee of the American Association of Orthodontists.

Final Submission Date.—No essay will be considered for this competition unless received in triplicate on or before March 7, 1960, by Dr. Faustin N. Weber, University of Tennessee School of Dentistry, 3387 Poplar Ave., Memphis, Tennessee.

Herbert I. Margolis, Chairman,
Research Committee
Tufts University School of
Dental Medicine
136 Harrison Ave.
Boston 11, Massachusetts

American Association of Orthodontists 1960 Research Section Meeting

Continuing the policy of recent years, the program will consist of a series of ten-minute research reports which may be presented orally or read by title only. All persons engaged in research are urged to participate in this program, which will be held April 24 through April 28, 1960, in Washington, D. C.

Each participant is asked to prepare a 250-word abstract for publication in the AMERICAN JOURNAL OF ORTHODONTICS. Abstracts for publication and the ten-minute oral presentation at the meeting should be carefully prepared to present an adequate description of the import of the investigation.

Forms for use in submitting the title and 250-word abstract of your research will be sent to each dental school orthodontic department and to any individual requesting one. Please send your title no later than March 7, 1960, to Dr. Ernest H. Hixon, University of Iowa School of Dentistry, Iowa City, Iowa.

Herbert I. Margolis, Chairman
Research Committee
Tufts University School of
Dental Medicine
136 Harrison Ave.
Boston 11, Massachusetts.

American Dental Association Charges "Rigging" of Dentifrice Commercials

Television commercials for dentifrices are just as "rigged" as certain quiz programs have been disclosed to be, the American Dental Association charged on Nov. 12, 1959.

Dr. Harold Hillenbrand, secretary of the Association, branded as "misleading and detrimental to the dental health of the public" advertising claims for dentifrices on television as well as in printed media.

Rather than encouraging better dental hygiene, he contended, much of the current advertising discourages proper care.

Dr. Hillenbrand made the statement as he expanded on recent charges made against dentifrice advertising by Dr. Paul H. Jeserich, Ann Arbor, Michigan, president of the Association, and Arthur S. Flemming, secretary of the Department of Health, Education, and Welfare.

In his statement, the dental administrator said:

"Spokesmen for the Association appeared before Congress more than a year ago to suggest remedies for the situation. But, with one or two exceptions, nothing has been done, and the public continues to be duped.

"Unsupported advertising claims continue to give television viewers as well as readers a false sense of security about dental caries (decay), periodontal (gum) disease, bad breath due to diseases of the nose, sinuses, lungs, and the gastrointestinal tract, and serious systemic diseases presenting a variety of oral symptoms."

He questioned whether the advertising industry could "clean up or give up" its own house as it was warned to do by Donald S. Frost, new chairman of the Association of National Advertisers. Frost, who spoke at the annual meeting of the group in Hot Springs, Virginia, is vice-president of Bristol-Myers Company, one of the big dentifrice manufacturers.

Dr. Hillenbrand reiterated the Association's stand that Congress must enact legislation which would permit Federal agencies to control distorted advertising.

The organization originally offered the recommendation in July, 1958, when it presented testimony on dentifrice advertising before Rep. John A. Blatnik's Legal and Monetary Affairs Subcommittee.

Nothing has happened since 1958, Dr. Hillenbrand commented, to make the Association change its mind that laws in this area must be given teeth.

The dental administrator said the profession recognizes dentifrices solely as helpful adjuncts in cleaning the teeth. He explained:

"They are appreciated because of their abrasive and detergent actions and may assist in removal of stains and other foreign substances. Beyond this, no other merits for dentifrices have been scientifically established."

Dr. Hillenbrand emphasized that advertising should not suggest or imply that dentifrices can do any of the following:

—Substitute for regular toothbrushing.

—Substitute for dental public health procedures, such as fluoridation of community water supplies.

—Permit unrestricted consumption of sugar-containing confections with no consequent hazard to dental health.

—Substitute for necessary or appropriate professional dental treatment.

—Decrease need for detection of caries at a very early stage.

—Prevent oral disease other than through the contribution to cleansing except in instances in which the dentifrice as marketed has been subjected to clinical trials which satisfy defined criteria and give valid evidence of the claimed action.

Dr. Hillenbrand labeled as "a bright spot in the dentifrice advertising picture" changes that several manufacturers have made in their claims. These products, he explained, now claim value solely as cleansing agents in conformance with Association beliefs.

On the debit side, he was particularly critical of assertions by one manufacturer that use of its dentifrice provides the teeth with an "invisible shield" against tooth decay through just one brushing a day.

Dr. Hillenbrand attributed exaggerated claims and costly promotions for dentifrices to the fact the American public in 1958 spent more than $230 million on the agents. He suggested that the public, through its spending, can serve as a policing agency to help bring dentifrice advertising back within the realm of truth.

Statement* by Arthur S. Flemming, Secretary of Health, Education, and Welfare

The Surgeon General informs me that he and his associates in the Public Health Service are in complete accord with the stand long taken by the American Dental Association against false and misleading statements in the advertising of dentifrices. You will recall that only last week, Dr. Paul H. Jeserich, president of the Association, said his organization will urge Federal action to halt these "reckless claims."

Any enforcement action, of course, would be the responsibility of the Federal Trade Commission. However, there are principles involved here that are of direct concern to the Department in carrying out its own responsibilities.

False advertising of dentifrices is of considerable public health concern. People who believe the misleading advertising they hear and read and see—and who buy and use the product—may be lulled into a false sense of well-being and fail to obtain proper care from a dentist. Neglect of proper dental care, for whatever reason, sooner or later catches up with most people, and they find themselves with serious dental problems.

The Surgeon General points out that while dentifrices are necessary for care of the teeth, they are primarily mechanical aids for cleaning them. No dentifrice in itself can prevent tooth decay or pyorrhea or any other disease. And no dentifrice can lighten the color of the teeth. In fact, Dr. Leroy E. Burney emphasizes, tooth "bleaches" are unsafe to use.

This kind of false advertising does a great disservice to the American people.

---

*Released at News Conference, Washington, D. C., Monday, November 9, 1959.

Dr. Devlin Receives Award

Gerard A. Devlin of Westfield, New Jersey, was presented with the Distinguished Alumnus Award of the New Jersey Section of the National Alumni Association of the Baltimore College of Dental Surgery, Dental School, University of Maryland, on Nov. 4, 1959.

Notes of Interest

Martin S. Goldberg, D.D.S., M.S.D., announces the opening of his office for the practice of orthodontics at City Line and Haverford Ave., Philadelphia, Pennsylvania.

Jacob M. Golden, D.D.S., announces the opening of his office at Rockefeller Center, 630 Fifth Ave., New York, New York, practice limited to orthodontics.

Philip Greenstine, D.D.S., announces the opening of his office at 1567 Dewey Ave., Rochester, New York, practice limited to orthodontics.

Drs. William R. Humphrey and George H. Siersma announce the association of Dr. William Cable Jackson, Jr., 1232 Republic Bldg., Denver, Colorado, orthodontics exclusively.

James M. Jolly, D.D.S. M.S., announces the removal of his office to Suite 308 Coronet Bldg., 225 South Meramec Ave., Clayton, Missouri, practice limited to orthodontics.

Philip Levens, D.D.S., M.S., announces the opening of his office for the practice of orthodontics at 8230 Forsyth Blvd., Suite 202, Clayton, Missouri.

Herbert I. Margolis, D.M.D., is pleased to announce the association of Leo E. Duprey, D.M.D., 311 Commonwealth Ave., Boston, Massachusetts, for the practice of orthodontics.

Charles Don Miller, D.D.S., M.S.D., announces the opening of his office for the practice of orthodontics at 201 S. Berry Rd., Norman, Oklahoma.

Dr. Roger X. O'Meyer wishes to announce the removal of his office from 93 Rue du Commerce, Paris 15, France, to 267 Rue St. Honoré, Paris 8, France, practice limited to orthodontics.

Earl E. Shepard, announces the removal of his office to Suite 307-9 Coronet Bldg., 225 South Meramec Ave., Clayton, Missouri, practice limited to orthodontics.

Postgraduate Courses in Orthodontics

LOYOLA UNIVERSITY SCHOOL OF DENTISTRY

A postgraduate course entitled "Cephalometrics for Treatment Planning and Case Analysis" will be offered by Loyola University School of Dentistry, Chicago, Illinois, on Jan. 20 to 23, 1960. The course will be given under the direction of Dr. Cecil Steiner.

UNIVERSITY OF ALABAMA SCHOOL OF DENTISTRY

A refresher course in "Removable Orthodontic Appliance Construction" will be given at the University of Alabama School of Dentistry on Feb. 13, 14, and 15, 1960, by Dr. Samuel Gore.

Forthcoming meetings of the American Association of Orthodontists:
1960—Shoreham Hotel, Washington, D. C., April 24 to 28.
1961—Denver Hilton Hotel, Denver, Colorado, April 16 to 21.
1962—Statler Hotel, Los Angeles, California, April 28 to May 3.
1963—Americana Hotel, Miami Beach, Florida, April 28 to May 2.

OFFICERS OF ORTHODONTIC SOCIETIES

The AMERICAN JOURNAL OF ORTHODONTICS is the official publication of the American Association of Orthodontists and its component societies. The Editorial Board of the JOURNAL is composed of a representative of each of the component societies.

American Association of Orthodontists

(Next meeting April 24-28, 1960, Washington)

President, George M. Anderson - - - - - - - - - - - - - 3700 N. Charles St., Baltimore Md.
President-Elect, William R. Humphrey - - - - - - - - - - - - Republic Bldg., Denver, Colo.
Vice-President, Frank A. Heimlich - - - - - - - - 1824 State St., Santa Barbara, Calif.
Secretary, Earl E. Shepard - - - - - - - - - - - 225 South Meramec, Clayton, Mo.

Central Section of the American Association of Orthodontists

(Next meeting Sept. 18-20, 1960, St. Louis)

President, Leo B. Lundergan - - - - - - - - - - 8000 Bonhomme Ave., St. Louis, Mo.
Secretary-Treasurer, Kenneth E. Holland - - - - - - 1019 Sharp Bldg., Lincoln, Neb.
Director, Elmer F. Bay - - - - - - - - - - - 216 Medical Arts Bldg., Omaha, Neb.

Great Lakes Society of Orthodontists

President, Richard C. Beatty - - - - - - - - - - - - 1140 Hanna Bldg., Cleveland, Ohio
Secretary, D. C. Miller - - - - - - - - - - - - 40 South Third St., Columbus, Ohio
Director, Harlow L. Shehan - - - - - - - 601 Jackson City Bank Bldg., Jackson, Mich.

Middle Atlantic Society of Orthodontists

President, Kyrle W. Preis - - - - - - - - - - 700 Cathedral St., Baltimore, Md.
Secretary-Treasurer, Charles S. Jonas - - - - - - Mayfair Apts., Atlantic City, N. J.
Director, Louis E. Yerkes - - - - - - - - - - - 825 Linden Ave., Allentown, Pa.

Northeastern Society of Orthodontists

(Next meeting March 13-15, 1960, New York)

President, Wilbur J. Prezzano - - - - - - - - Medical Centre, White Plains, N. Y.
Secretary-Treasurer, David Mossberg - - - - - - 36 Central Park S., New York, N. Y.
Director, Norman L. Hillyer - - - - - - - 230 Hilton Ave., Hempstead, L. I., N. Y.

Pacific Coast Society of Orthodontists

(Next meeting Feb. 21-24, 1960, Palo Alto)

President, Richard Railsback - - - - - - - - - 1333 Grand Ave., Piedmont, Calif.
Secretary-Treasurer, Warren Kitchen - - - - - - 2037 Irving St., San Francisco, Calif.
Director, Richard Railsback - - - - - - - - - - 1333 Grand Ave., Piedmont, Calif.

Rocky Mountain Society of Orthodontists

(Next meeting Sept. 25-28, 1960, Santa Fe)

President, William A. Blueher - - - - - - - - - 801 Encino Pl., Albuquerque, N. M.
Secretary-Treasurer, E. H. Mullinax - - - - - - - 8790 W. Colfax, Lakewood, Colo.
Director, Ernest T. Klein - - - - - - - - - - - 707 Republic Bldg., Denver, Colo.

Southern Society of Orthodontists

President, H. Harvey Payne - - - - - - - - - - 60 Fifth St., N.E., Atlanta, Ga.
Secretary-Treasurer, William H. Oliver - - - - - - - 1915 Broadway, Nashville, Tenn.
Director, Boyd W. Tarpley - - - - - - - 2118 Fourteenth Ave., S., Birmingham, Ala.

Southwestern Society of Orthodontists

(Next meeting Sept. 25-28, 1960, Kansas City, Kan.)

President, John W. Richmond - - - - - - - 493 Brotherhood Bldg., Kansas City, Kan.
Secretary-Treasurer, Tom M. Matthews - - - - - - 8215 Westchester Dr., Dallas, Texas
Director, Nathan Gaston - - - - - - - - - - - - 701 Walnut St., Monroe, La.

American Board of Orthodontics

(Next meeting April 18-23, 1960, Washington)

President, L. Bodine Higley - - - - University of North Carolina, Chapel Hill, N. C.
Vice-President, Jacob A. Salzmann - - - - - - - 654 Madison Ave., New York, N. Y.
Secretary, Wendell L. Wylie - - - - - University of California School of Dentistry, The Medical Center, San Francisco, Calif.
Treasurer, Paul V. Reid - - - - - - - - 1501 Medical Arts Bldg., Philadelphia, Pa.
Director, B. F. Dewel - - - - - - - - - - - - 708 Church St., Evanston, Ill.
Director, Frank P. Bowyer - - - - - - - - 608 Medical Arts Bldg., Knoxville, Tenn.
Director, Alton W. Moore - University of Washington School of Dentistry, Seattle, Wash.

American Journal of Orthodontics

Official Publication of the American Association of Orthodontists,
Its Component Societies, and
the American Board of Orthodontics

VOLUME 45

JANUARY—DECEMBER, 1959

Office of the Editor: 8229 Maryland Ave., St. Louis
Published by The C. V. Mosby Company, St. Louis

VOLUME 45

Printed in the
United States of America

INDEX TO VOLUME 45

AUTHOR INDEX*

*January, pp. 1-82; February, pp. 83-162; March, pp. 163-242; April, pp. 243-322; May, pp. 323-398; June, pp. 399-480; July, pp. 481-560; August, pp. 561-640; September, pp. 641-720; October, pp. 721-800; November, pp. 801-880; December, pp. 881-962.